Of Academics, Publishers and Journalists: Popular Evolutionary Psychology in the UK

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Declaration:

I declare that this thesis is my own work throughout

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Dedication:

This thesis is dedicated to my Granny, Marjorie Constance Worrall:
for kicking things off,

my parents, for helping me go my own way…

and to James

With all my love.

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Abstract:

Evolutionary psychology (EP) is an emerging area of research, mostly located in the social sciences, which stresses the importance of, and seeks to investigate further, the evolutionary origins of modern human psychology and behaviour. Over the 1990s, claims made by evolutionary psychologists were extensively debated on a popular level in the UK, particularly through the publication of 'popular science' books on the subject, and by the appearance of many academics in the mass media discussing the issues raised. In such discussions, evolutionary psychology claims were often closely related to discussions of sexual politics, differences between men and women, and changes in workplace and family roles. Other subjects interlinked with evolutionary psychology in the media included concerns over biological determinism, developments in genetics, biotechnology and neurobiology, and changes in the political landscape during the 1990s. This research is a case study of these popular debates, looking at the UK press and other media coverage of evolutionary psychology from 1990 until 2001. I have carried out quantitative (including content) analyses of the press, and qualitative analyses of wider media coverage, alongside in-depth interviews with academic and media actors involved in popular evolutionary psychology.

I found that the UK media covered evolutionary psychology in a strikingly different pattern to that seen in more generalised media coverage of the sciences. There are two major aspects to this, whereby evolutionary psychology was less often coded specifically as science (or covered by science journalists) when it was covered. In addition, a much higher proportion of scientists, authors and academics wrote about evolutionary psychology than did about a comparative 'science' subject. I then drew upon the interview material and qualitative media analysis to explore the reasons behind these differences, looking at the different interests and understandings of academics and media professionals with regard to evolutionary psychology.

There was a generalised understanding amongst academics and media professionals alike that evolutionary psychology provided material for 'good' media stories, seen as relevant to everyday life, easily communicated, understood and discussed by non-scientists. This boosted the public visibility of the subject and made it more likely to be handled by journalists and editors with no specialist knowledge of the sciences. The appearance of

many popular science books on the subject played a major role in creating coverage in other media forms and provided a path by which academics could communicate 'directly' to audiences and each other about evolutionary psychology. This helped them achieve their aims of bringing attention to, boosting or attacking the status of the emerging subject. Popular science has in this case provided a 'creative space' for scientists outside of the constraints of ordinary academic discourse, allowing them to reach across disciplinary boundaries and claim legitimacy over the study of human beings.

'Seven and a half million years,' said Deep Thought.
'Seven and a half million years...!' they cried in chorus.
'Yes,' declaimed Deep Thought, 'I said I'd have to think about it, didn't I? And it occurs to me that running a programme like this is bound to create an enormous amount of popular publicity for the whole area of philosophy in general. Everyone's going to have their own theories about what answer I'm eventually going to come up with, and who better to capitalize on the media market than you yourselves? So long as you can keep disagreeing with each other violently enough and slagging each other off in the popular press, and as long as you have clever agents, you can keep yourselves on the gravy train for life. How does that sound?'
The two philosophers gaped at him.
'Bloody hell,' said Majikthise, 'now that is what I call thinking.'

Douglas Adams, *The Hitchhiker's Guide to the Galaxy*, 1979, p130; London: Pan Books

'So... we have what the people are interested in, and human interest stories, which is what humans are interested in, and the public interest, which no one is interested in.'
'Except the public, sir,' said William, trying to keep up.
'Which isn't the same as people and humans?'
'I think it's more complicated than that, sir'

Terry Pratchett, *The Truth*, 2000, p429; London: Doubleday

Chapter I:

Introduction to the Thesis

1.1 WHAT IS THIS THESIS ALL ABOUT?

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Chapter I:

Introduction to the Thesis

1.1 WHAT IS THIS THESIS ALL ABOUT?

1.1.1 Popular evolutionary psychology in the UK of the 1990s

During the 1990s, a new grouping of scientists appeared on the scene in the popular media in Britain. In the space of a few years, evolutionary psychologists, as they described themselves, were writing bestselling books and articles in the national press and news magazines, and appearing on radio and television on a fairly regular basis. Arguing that that they finally had the scientific answers to some of the really difficult problems of why people do the things that they do, evolutionary psychologists claimed to have reached a new understanding of human nature. As their moniker suggested, they felt that an understanding of evolution was the key to reaching such a goal, and attacked the validity of the approaches of other 'experts' in the area, such as popular psychologists, other social scientists, feminists and social workers.

Many of the claims that evolutionary psychologists made were highly controversial, particularly when these regarded the evolutionary basis of sex and gender differences. In particular, claims that adultery, monogamy, rape, the glass ceiling and standards of female beauty all have their roots in our evolutionary history provoked a strong response from academics in a wide range of fields who objected that such claims ignored the research consensus in their own subject. In addition to these academics, many other kinds of 'experts' also contributed their opinions about evolutionary psychology, both supporting and criticising the claims made. These included popular science authors and science journalists, but also feminist writers and journalists, columnists, novelists, and indeed many people who had no special expertise in the area, but who contributed on the basis of their own experiences and common sense knowledge. This was quite unusual for discussions of science in the media in two major ways: firstly in the appearance of academics arguing about scientific claims in the public domain of the mass media, rather than presenting a unified front of certain knowledge,

as happens with much popular science. Secondly, the fact that contributions from such a wide range of 'experts' were not only tolerated but welcomed, rather than being restricted only to a small group of properly qualified experts such as academic and science journalists, was also highly unusual.

1.1.2 Evolution and humans in the second half of the 20th century

Evolutionary psychology (or EP, as it is often abbreviated) first appeared as 'evolutionary psychology' in the academic literature in 1989 (Buss, 1989; Cosmides and Tooby, 1989a, 1989b), though several pieces of research were published prior to this which were subsequently identified as evolutionary psychology (e.g. Daly and Wilson, 1988). Over the late 1980s and early 1990s, a core group of researchers formed, based in the USA and Canada, and closely associated with the formation of the academic society the Human Behaviour and Evolution Society (HBES) in 1988.[1] Members of this group largely had research backgrounds in sociobiology and behavioural ecology, shared a commitment to extending such an approach to working with humans and to using techniques from experimental psychology and physical anthropology to do so. This shift was reflected in HBES changing the name of its journal from *Ethology and Sociobiology* to *Evolution and Human Behavior* in 1996.

There are several important theoretical elements to the approach of these evolutionary psychologists, which distinguished them from their contemporaries at the time. They strongly rejected theories of group selection held by some sociobiologists, and instead adopted the idea that natural selection occurs exclusively at the level of genes, rather than organisms or groups (c.f. Dawkins, 1976). At the same time, they stated they were only interested in those aspects of human behaviour that are universally expressed across all human cultures, which distinguished them from the neighbouring discipline of behavioural genetics. Finally, the evolutionary psychologists took up an idea from cognitive psychology, that the human mind is divided up into a number of areas, known as modules, each of which does a specialised job (Fodor, 1983). They extended this idea to argue for 'massive modularity': that there are many more modules, performing quite specific tasks such as face recognition, and that each of these has been

[1] See the society's website http://www.hbes.com/ for further information on HBES.

subject to evolutionary pressures, just as organs in the body are (e.g. Cosmides and Tooby, 1992).[2] However at this time, the evolutionary psychologists were only one group amongst a wide variety of evolutionary approaches to humans, represented by a number of professional societies, and with practitioners across the social and natural sciences.

Prior to evolutionary psychology's rise to public attention in the 1990s, there have been a number of other public controversies (in the UK and US) over what role evolution and biology play in what people do. In the middle of the 1970s, the publication of two books, one American and one British, attracted between them a good deal of media attention, followed by criticism in the public domain by other academics who disagreed with the claims being made. Both *Sociobiology: The New Synthesis* (Wilson, 1975) and *The Selfish Gene* (1976) were published by university presses, but written in a non-technical style that would now be called 'popular science'. The subsequent criticisms came from both natural and social scientists, who accused sociobiology of being racist, sexist and of justifying the status quo of inequalities in society. This controversy initially took place in the American mass media, in for example the *New York Review of Books*, and in further popular books such as Wilson's *On Human Nature* (1978), which extended his arguments about the evolutionary bases to human violence, xenophobia and sexual inequality. It subsequently moved back into academia, and here continued through the 1980s in both biology (e.g. Kitcher, 1985; Lewontin, Rose and Kamin, 1984) and the social sciences, particularly in feminist critiques of the sciences (e.g. Bleier, 1984; Brighton Women and Science Group, 1980).

One of the most frequent criticisms of sociobiology that came out of this controversy was the charge that it was biased by rightwing or conservative political views and was racist and sexist, or that the science could be interpreted as justifying this kind of politics. Critics often linked sociobiology to earlier research on links between race and I.Q., which argued that there were measurable differences in intelligence between different ethnic groups, and that these differences were genetic and

[2] Fodor has subsequently argued against evolutionary psychologists' interpretations of his work:: see Fodor (2000)

evolutionary in origin (e.g. Jensen, 1969).[3] However, lying behind all of these controversies about evolution and humans has been the legacy of Social Darwinism, eugenics, and the Nazis' use of these ideas to justify their policies of extermination of the 'unfit' leading up to and during the Second World War. Critics on the Left opposed to sociobiology and race-IQ research tended to link these ideas with this legacy, partly because it helped to discredit the claims that were being made, but also out of genuine abhorrence and fear that such a thing could happen again. After the war, biologists and social scientists came together in the international organisation UNESCO to issue a statement arguing there was no biological reality to 'race'. In the following years, biologists moved away from studying humans, while social scientists moved away from using biology in their research (see, e.g. Malik, 2000, ch.5). The controversies that have taken place over issues like evolutionary psychology, sociobiology and race-IQ since that time must be understood as taking place against this background. Popular controversy over evolutionary psychology forms the latest episode in a series of conflicts over this postwar consensus on biology and humans, with one side attempting to change things while the other trying to maintain the status quo. As such, although I will not be investigating this history in my thesis, it does hang over the entire area, and imbues many of the arguments made with very strong political connotations, which should be borne in mind throughout.

1.2 WHY IS POPULAR EVOLUTIONARY PSYCHOLOGY INTERESTING?

1.2.1 How I arrived at the research topic

There are a number of reasons why I decided to do research on popular evolutionary psychology, but the major trigger came while I was doing my MSc in Science Studies at Edinburgh during 1998, and was trying to decide on a dissertation topic. My undergraduate degree had been a joint course in psychology and zoology, specialising in evolution and animal and human behaviour, so I was surprised to suddenly come across a great deal of discussion in the media about a 'new science' of evolutionary psychology. I had never heard this label being used before, even though I had learned about some of

[3] Such arguments have become prominent again in the public domain during the 1990s, see Herrnstein and Murray (1994)

the people and research now being claimed under that name, in particular the linguistics work of Steven Pinker, the writings of Matt Ridley and some of the research on facial symmetry.[4] It is of course possible that I simply wasn't paying enough attention as an undergraduate, but it seemed odd to me that a new research area of the magnitude represented in the media was not given the same emphasis in specialised degree teaching on the subject only a year previously. Also, this research had been taught as material that was still highly uncertain and controversial within the field, and this was also reflected in some of the media coverage I was seeing, in which other scientists were attacking its claims as unfounded and unproven. All of this seemed to go strongly against many ideas about how the popularisation of science works, which tend to suggest that a consensus is reached on scientific research before it is accepted as reliable knowledge, and is *then* communicated into the public domain through the mass media. This seemed to me to present an intriguing case study, with enough problems and contradictions to make it a worthwhile research topic for the sociology of science.

I felt the case study would help me to further pursue some of my interests in the social aspects of science, which had been part of the reason for my move from biology into the social sciences in the first place. I have always been interested in gender and sexual politics on personal, political and academic levels, and had closely followed the interplay between these politics and evolutionary biology throughout my undergraduate training. Studying popular evolutionary psychology therefore allowed me to start researching these issues at first hand. I have also been an avid 'audience' for popular science since I was a small child,[5] and I continued this interest through into adulthood. During my degree, I had found myself becoming increasingly fascinated with how scientific ideas move into and out of technical and nontechnical discussions, and the different ways language was used in lecturing, seminar discussions, journal articles and popular science. Yet again, research on popular evolutionary psychology would allow me to start investigating these issues for myself. Finally, this research project has also allowed me to keep up with my interests in evolution and behaviour, whilst approaching them from a very different angle. I therefore did my MSc dissertation research on the subject, carrying it out as an exploratory pilot study for a prospective PhD, and

[4] Discussed in detail in Chapter Five, section 5.2

[5] Like many other people of my generation, I probably have David Attenborough to thank for this.

subsequently used the findings and my experience of the MSc work to plan and design the research for this PhD thesis.

1.2.2 Research aims and objectives

This doctoral thesis aims to examine evolutionary psychology in the UK mass media as a case study of contemporary popular science. It concentrates on the UK media in order to keep the scope of the research at a manageable level, but includes material from academic and non-UK sources where they have had a direct impact on discussions in the UK media. It surveys media coverage of evolutionary psychology since its appearance in the mid-1990s until the year 2001, looking at where, when and how different forms of media have aired the subject. Drawing upon the research literature on 'science in public'[6] and on the theoretical concepts of social worlds theory and boundary work,[7] the research looks at relationships between disciplinary development, popular coverage and public controversy at the interface between the natural and social sciences. It also addresses the working practices of the media to try and find out why evolutionary psychology received the amount, and prominence of media coverage that it did, and try and find out why it seemed that so many different kinds of 'experts' were commenting on the subject. Finally, the research addresses the social and political contexts in the UK of the 1990s, within which popular evolutionary psychology debates were taking place.

The broad and somewhat eclectic approach that I have taken has resulted in an equally broad spread of research objectives and questions. However, they are all oriented around the overarching question I posed in the previous section. Why did evolutionary psychology appear in the media as quickly and as prominently as it did during the 1990s, and why did this happen while the science in question was still controversial in academia? The full, extensive list of research questions appears in Chapter Three, section 3.3.2, but they grouped together under six main research objectives, which are reproduced here:

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[6] Research on science communication, popular science and the public understanding of science (Gregory and Miller, 1998)

[7] Both currently in use in STS research: see Clarke (1990) for social worlds theory and Gieryn (1983) for boundary work.

i) To map out the outlines of popular evolutionary psychology in the UK

ii) To analyse evolutionary psychology as 'public science'

iii) To analyse popular evolutionary psychology as science about people

iv) To analyse the wider contexts of popular debates about evolutionary psychology

v) To map out the social worlds of popular evolutionary psychology

vi) To analyse the boundaries and rhetoric of evolutionary psychology debates

1.3 WHAT AREAS OF RESEARCH CAN MY WORK CONTRIBUTE TO?

1.3.1 Summary of the research findings

My investigation of evolutionary psychology as it appeared in the UK media of the 1990s revealed an example of popular science which was unusual in a number of ways. Most notably, discussions of evolutionary psychology in books, newspapers and the radio constituted a public scientific controversy, in which academics and other actors made and challenged knowledge claims in the public domain of the UK mass media. This was evident from quantitative data, such as a finding that more academics and authors were writing press articles about evolutionary psychology than about another closely related scientific topic, or that these articles slowly became more critical of EP knowledge claims over the 1990s. It was also evident from looking at the media material itself, which constituted a series of claims about evolutionary psychology, often structured around the publications of popular science books on the subject, as well as from interview discussions with actors in popular evolutionary psychology. By analysing the disciplinary ecology and boundary claims being made in these debates, I established that this turn to the public domain was probably happening because of evolutionary psychology's precarious position in academia, and need to reach out to and enrol peers in other academic disciplines.

The second important way in which popular evolutionary psychology was unusual was in the way that it was treated and covered by the media. Evolutionary psychology

stories appeared less often in 'traditional' sites for science in the media such as the main body of news and specific science sections, and more often as feature articles, reviews and columns/commentary pieces. These articles were also far less likely to be written by specialist science journalists, and more likely to be written by generalists, or specialists in other subjects. Interview discussions about this finding revealed that this was because many actors in popular evolutionary psychology considered the subjects to be more easily understood and written about by non-specialists than other sciences. This was because much of popular evolutionary psychology discussion is about people and their relationships including issues of sexuality and gender relations. Following this, I analysed the usage of expertise in popular discussions of evolutionary psychology and found that often the 'scientific' knowledge claims of EP were intertwined with various 'lay' forms of knowledge such as common sense and personal experience.

Because the subject matter of evolutionary psychology was about people in this way, and because the particular claims that were made frequently had strong socio-political implications, I also analysed the ways in which these claims were mutually shaped by wider contexts of discussion in the UK of the 1990s. I found that popular evolutionary psychology claims frequently spoke strongly to issues of sexual and gender politics being discussed at the time, such as the 'battle of the sexes', changing gender roles, and concerns about men and masculinity in the 1990s. I also found that evolutionary psychology had close linguistic and practical links with the rise to power of centre-left governments in the USA and UK during the mid-1990s. Finally, these kinds of claims were also closely mutually shaped with other contemporary claims made in the biosciences, such as in genetics and neurobiology. A generalised atmosphere of optimism and high levels of discussion of these kinds of sciences also helped discussions of evolutionary psychology gain an airing in the media at that time.

1.3.2 Related literatures

Working in the tradition of controversy studies in social studies of science and technology, this thesis is of interest both as a study of a live controversy that has not yet reached closure, and as a controversy occurring in the public domain: popular evolutionary psychology displays in public the complex social and political messiness of

'science in the making' (Latour, 1987). This is in itself an unusual occurrence, as studies have shown that popular science often plays down controversy and details of methodology to emphasise the certainty of scientific knowledge (e.g. Collins, 1987). This raises the question of why in this case scientists have felt the need to go into the public domain to make their arguments. The answers to this are complex, but can be linked to the need for different scientific groups to establish the legitimacy of their work over that of other approaches, drawing the boundaries of what is and is not legitimate science (Gieryn, 1983). Also, as described above, debates about evolutionary psychology can be seen as the latest episode in a series of controversies over the role of evolution in human psychology, behaviour and society. For this reason, the thesis also contributes to a body of sociological and historical studies of evolutionary and Darwinian thought, which thus far does not (to my knowledge) include any research on evolutionary psychology.

The thesis has something to say not only about popular science, but also about current debates in the wider area of 'science in public' research concerning models of relations between sciences, media and publics (Gregory and Miller, 1998). The case study contributes further evidence on the bankruptcy of the canonical account of these relations, and unravels some of the complex and heterogeneous ways in which different academic and media actors work together. On a theoretical level, I argue that a research approach based on social worlds theory (e.g. Clarke, 1998) can help in resolving some of the problems encountered in attempts to restructure the canonical account in the light of the empirical findings of the past ten years or so. The whole thesis then puts these ideas into practice which I feel represents a valuable contribution to both theory and research practice in the area. It also contributes to a growing body of research on the construction of scientific and technological expertise (e.g. Collins and Evans, 2000), by investigating an area where, at least in public debates, a variety of different forms of expertise are seen as valid. The relationship between scientific and common sense knowledge is one that has started to be investigated in recent years (Shapin, 2001) and this research can contribute to this effort, as well as to research on media communication of social, rather than natural, sciences (Evans, 1995).

On a final note, as I have described, discussions of popular evolutionary psychology have had a strong social and political relevance, referring as they do to issues such as rape, the glass ceiling, free will and the implications of modern biology in everyday life. The study can also be seen as an investigation of current cultural anxieties in the UK about sexuality and gender politics; advances in the biosciences; and the possibilities (or lack thereof) of sociopolitical action in making changes to society. In this way, the study also contributes to growing feminist and social scientific discussions about what today's Darwinism means for these issues (e.g. Segal, 1999)

1.4 HOW DID I DO IT?

1.4.1 Overall research design

Because I was interested in getting an overall picture of popular evolutionary psychology, it seemed important to look at not only where, how much and who was writing about the subject in the media, but also at what people were saying about it and why they held these opinions. Therefore I employed three different research strategies for data collection and analysis, triangulating together the data as I proceeded:

Content Analysis:
I used two different forms of content analysis to gain a picture of the timeframe, amounts and distributions of EP coverage, concentrating on the print media. The first of these used CD-ROM databases of the broadsheet press to search for articles about EP. The second used this material, plus that gathered from other sources such as articles from the tabloid press and news magazines, to examine more closely the themes discussed in EP coverage. Both datasets were analysed to produce descriptive statistics of the timeframes, authorship, locations and generalised content of media coverage of EP, as well as crucially allowing a comparison with coverage of a similar area of science. These analyses also generated much of the raw data used in the next stage of the research.

Qualitative Analysis of Texts:

The print media material about EP collected during the content analyses, alongside audio-visual material from other media forms was then analysed qualitatively. This helped me pick out in greater detail major themes of discussion in the coverage, which had been suggested by content analysis, as well as the rhetorical strategies employed by participants when arguing about EP. Because of the breadth and volume of this material, as well as its complexity, it was analysed using a more flexible discourse based approach, coding it fairly broadly, and working with paper copies rather than electronic material.

In-Depth Interviewing:

Semi-structured interviews were carried out with 21 participants involved in popular debate over EP, or in academic research in the area. This included not just academics, but also journalists, writers, publishers and other media professionals who had been involved at some stage or other. An extremely helpful strategy used during these interviews was to present some of the findings from the content analyses as stimulus materials to generate discussions about the media coverage of EP. These interviews were recorded and the transcripts were coded and analysed using the qualitative data analysis computer package QSR NUD*IST version 5.

This research design allowed me to proceed in an iterative manner, moving back and forth between these methods, and also from research questions and theory to empirical work and back again, so that each stage of the research could inform and adapt the next. This kind of approach is one that has been called for several times in the literature on science communication and public understanding (e.g. Evans and Horning Priest, 1995), but seems to have rarely been put into practice.

1.4.2 Chapter summary

This thesis has been structured so that the chapters can largely stand alone as individual pieces, cross referring and complementing each other to build into a larger argument, but also making sense if read alone. This is partly for publication purposes, but is mostly because the elements that make up the thesis do not flow from one

another linearly, but instead consist of interrelating strands that are equally as important as each other. There are six substantive chapters, with the first three acting to introduce the research problem, outline how I have done the work, and to introduce the basic parameters of popular coverage and discussion of evolutionary psychology in the UK. The final three chapters then carry out the analytical work of the thesis, each of them focussing on a different theme of importance in creating the popular evolutionary psychology case. The conclusion then draws together and summarises the findings of the thesis, outlining the wider conclusions and implications of those findings.

Chapter 1 – Introduction

Chapter 2 - Changing Accounts of Science in Public

Literature review and theory chapter, giving an overview of the science in public research literature, problems encountered with the traditional, 'canonical' account and attempts to develop new models of science and society. It then introduces social worlds theory as it has been used in sociology and social studies of science and technology. It then builds an argument that this approach could be of help in solving some of the problems encountered in restructuring the canonical account, as well as in carrying out the case study research on popular evolutionary psychology.

Chapter 3 - Research Design and Methodology

This chapter explains my approach to carrying out this research, including the findings of the MSc pilot study, research design, research aims and questions. It also explains the several methodologies used in greater detail, and explains how they fit together with each other and with my overall philosophy of research.

Chapter 4 - Evolutionary Psychology in the UK Media

This chapter presents a coherent picture of where, when and how evolutionary psychology has been covered by the various forms of media in the UK, including a basic comparison of this coverage with academic discussions over the same period. It allows presents all of the findings of the quantitative analyses in one place, to subsequently be drawn upon and interpreted further in the later chapters.

Chapter 5 - Social and Political Contexts of Popular Debates over Evolutionary Psychology

This chapter discusses the wider contexts of popular discussions of evolutionary psychology, drawing on material gathered from the UK media as well as interview comments. It firstly reviews some of the more prominent claims of popular evolutionary psychology, concentrating on those claims relevant to gender issues as the ones which have received most attention. Then it looks at the issues that have mutually shaped the controversy (both giving rise to and feeding off of evolutionary psychology claims), drawing on interviews and media material. This includes not only discussions of the sexual and gender politics of the 1990s, but also the standing of mainstream 'party' politics at the time, and the rise to prominence of biology and biotechnology over the decade.

Chapter 6 - "It's Just Common Sense": Evolutionary Psychology, the Media and Expertise

This chapter draws upon the content analysis finding that EP is written about by different people, and is discussed in different areas of newspapers to other 'science'. Working largely with the interview material and some media commentary, it explores the reasons underlying this different treatment, looking at media practices as well as the particular ways in which people interact with science 'about people'. This is demonstrated by showing how a wide variety of different forms of expertise are mobilised in popular debate of evolutionary psychology.

Chapter 7 - Evolutionary Psychology as Public Science and Boundary Work

Drawing on the quantitative findings indicating that more scientists and academics are communicating 'directly' in the public domain than is usually seen with discussions of other scientific fields, this chapter explores the possible reasons behind this difference. Why was this controversy conducted in the public domain in the way that it was? To answer this, the chapter explores in depth links between conflicts over the disciplinary boundaries surrounding evolutionary psychology and moves into the public domain by academics both in favour of and opposed to EP.

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Chapter II:

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Chapter II:

Social Worlds Theory and Science in Public

2.1 INTRODUCTION

When I first started looking into doing research on popular evolutionary psychology, I found several quite diverse areas of literature that could potentially be drawn upon in putting together my study. Such research areas included the following (in no particular order): history, philosophy and social studies of biology and evolution; feminist theory and work on gender, science and technology; philosophy of science; sociological theory; the wider field of science and technology studies (STS); history and social studies of psychology; studies of expertise; research on popular and 'public' science; the public understanding of science; and studies of science communication and science in the media. Some of these literatures have been very important for this research, while others have turned out not be as directly applicable to my work as might first appear. However, I have drawn upon all of these areas at some point or other in the thesis, and this diversity means that, when writing up the research, it would not be practical to provide a full review of all these research literatures. Instead, I have followed a strategy of introducing each area as I discuss the relevant part of my findings about evolutionary psychology.

However, during the early part of my research I developed a theoretical framework, which has helped structure my overall approach to researching popular evolutionary psychology. Because the basic premise for the research surrounds questions of why and how evolutionary psychology has appeared in the popular domain in the way that it has, the obvious first place to look was the literature on popular science, the public understanding of science, and science communication. These form three discrete areas, which overlap to a certain extent, and are all ultimately concerned with issues of what happens to academics and scientific knowledge as they enter the public domain. As a whole, this area of research has undergone some dramatic changes in recent years, with traditional approaches and assumptions (known as the canonical account) undergoing a series of critiques, on sociological, political and empirical grounds. These critiques have

ushered in some dramatic changes in the methodologies, theories and aims of the research being carried out on these subjects. Alongside these changes, there have been several attempts at reformulating the models describing our overall understanding of the relationships between sciences, media and publics. However, these have been beset with some problems, with each attempt proving unable to take account of all the criticisms that have been made of the canonical account.

In this chapter, I will be reviewing the research literatures about popular science, science in the media, and the public understanding of science. I will describe the basic issues in each area, alongside the critiques that have been made of canonical approaches to research, and the key pieces of work that have been carried out subsequently. I will then describe some of the models that have been made of relations between science, media and public from both canonical and later approaches to the issues, and some of the problems I feel exist with the newer attempts at model building. Following this, I will then introduce an approach to sociological research, social worlds theory (SWT), that I believe can be of help in overcoming these problems. Social worlds theory has its roots in the sociological tradition of symbolic interactionism, and has been used to great success in research in STS, particularly in looking at interdisciplinary research and the development of new fields. After reviewing the central ideas and instances of this approach, I argue that a social worlds approach to researching science in the public domain could be very fruitful, and that a SWT perspective can be helpful in constructing new, more flexible and equal models of the area. Finally, I will briefly outline the particular ways in which this perspective has structured my own research on popular evolutionary psychology, and how I plan to interweave it into this case study.

2.2 CHANGING ACCOUNTS OF SCIENCE IN PUBLIC

In the past fifteen to twenty years, increasing levels of social research have been carried out on what happens when the worlds of scientific research encounter the rest of our society. This was initiated by a recurrence of anxiety amongst scientific institutions about science's status in society, prompted by reportedly low levels of scientific knowledge amongst the general public (Bodmer, 1985). Because of this, much

research has been focussed on what happens when knowledge moves between the academy and other areas of society. What has more recently become known as the broad area of 'science and society', 'science in society', or 'science in public' research is comprised of many diverse strands.[1] These can be broadly grouped into three areas: studies of science in the popular / public domain, studies of science and the media, and studies of how non-scientists interact with scientific knowledge.

In the first part of this section, I will start by describing a more traditional approach to these topics, characterised as the canonical, dissemination or deficit model, or account of relations between science and the rest of society. This account has been criticised on both empirical and more philosophical, or perhaps political grounds, and I then go on to discuss these criticisms, which have come out of more recent social research on popular science, science and the media, and the public understanding of science. Finally, the issue of models of science, public and media relationships will be discussed, and the problems that have been encountered when attempting to reformulate such models, taking into account recent critiques.

2.2.1 The canonical account

Often when reading discussions of the public understanding of science, the impression is given that this was never an issue prior to the publication of the Bodmer report on *The Public Understanding of Science* (1985). However, concerns about public ignorance and hostility to science, as well as about how the media cover scientific issues actually have a very long history. They tend to surface around times that relationships between what is now known as science and the rest of society are being constituted, shifted or changed in some way (Shapin, 1990; Felt, 2000). As a consequence of this, interventions by scientists or scientific institutions to 'remedy' such ills have an equally long history: scientists have been popularising their work for at least as long as they have

[1] After the House of Lords' Science and Technology Committee Report on *Science and Society* (2000), the UK Economic and Social Research Council's (ESRC) research programme *Science in Society*, and Gregory and Miller's book *Science in Public* (1998). 'Science and society' has a broader meaning in STS than that intended by the House of Lords' report, and 'science *in* society' implies that there are bits of science that *aren't* a part of society. Therefore, I will stick with the term 'science in public' as usefully encompassing the research areas of popular science, science communication, science and the media, and the public understanding of science in a single phrase.

been known as *scientists*, and probably for longer than that (Cooter and Pumphrey, 1994). The latest episode in this history was probably prompted by a number of factors, which came together in the early to mid-1980s.

At this time, right wing governments, particularly in the UK and USA, were severely cutting budgets for scientific research. It seemed to many scientists and policy makers that many more people were questioning the benefits of science and technology than ever before, particularly in the contexts of anti-nuclear and environmental movements. Finally, several sets of survey research initiated at this time found that most lay people surveyed (non-scientists, or 'the public') seemed to be highly ignorant about even very basic aspects of scientific knowledge (e.g. Miller, 1987; Durant, Evans and Thomas, 1989). A series of reports like Bodmer's decreed that levels of 'scientific literacy' needed to be increased, and that researchers should make increasing efforts to communicate their science to the wider world, explaining what they do, what it means and why it is important and beneficial for society. Consequently, organisations dedicated to increasing the public understanding of science (contracted, rather unfortunately, to PUS) were set up or reinvigorated by scientific organisations and societies. These events also instigated the first attempts at systematic social research on the problems of public understanding and science communication. Such research has subsequently developed into a thriving and diverse academic field and has ultimately led to serious questioning and reassessment of the basis from which it sprang.

From the perspective of scientific institutions, the stated reasoning behind moves to the public can probably be described as follows.[2] Science and its products are seen as central to the way our modern society works, and to the continuing improvement of living standards, economic prosperity and so on. However, many people have very low levels of understanding about scientific issues, and also disagree with or question this viewpoint, perhaps threatening state funding for scientific research. Scientific institutions would therefore argue that if people knew more science, they would be more likely to understand and therefore agree with 'scientific' (or perhaps conventional) viewpoints on issues such as, say, nuclear power. There are many democratic reasons for promoting greater public understanding of science. It can help citizens participate

[2] For a more extensive discussion of this issue, see Gregory and Miller (1998; ch.1)

more effectively in an increasingly technological society, understanding the arguments made for themselves rather than being told what to think. It provides feedback to society on what the resources used to fund research are being spent on and it provides people with the intellectual and aesthetic benefits of scientific knowledge. Finally, there are economic and political benefits to a country from supporting science and technological innovation, and from attracting young people into scientific careers.[3] When considering *how* exactly people acquire scientific knowledge, questions of communication become important: once most people have finished formal education, they find out most of what they know about science from television, radio and newspapers. Research on science and the media initially drew upon the pre-existing area of journalism and mass communication studies, as well as scientists' own deliberations on how to improve their communication with journalists and the wider public (e.g., McCall and Stocking, 1982).

These approaches are known variously as 'canonical', 'dissemination/diffusion', or 'deficit' models or accounts of science and the public. The terms 'dissemination' or 'diffusion' seem to be most often applied to discussions of science communication, while 'deficit model' is usually employed with reference to the public understanding of science. However, Shapin's (1990) discussion of the 'canonical account' of science and the public encompasses all of the issues considered here, and therefore seems to be the most sensible to use in this context of this discussion. What brings these accounts together are a number of shared assumptions about who 'science', 'the media' and 'the public' are; how they work; and how they relate to one another. In order to understand many critiques of the canonical account, it is helpful to outline what these assumptions are.

Primarily, the canonical account assumes that scientific knowledge is created or discovered from the natural world by scientists, is passed on to the media who then disseminate it to the greater mass of the public – lay people who can then absorb that knowledge. Alongside this comes assumptions about the forms of knowledge involved:

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[3] An example of this line of argument, often used by governments and policymakers, can bee seen in a speech given by the UK Prime Minister Tony Blair to the Royal Society in 2002 (*The Guardian*, 24th May 2002).

'pure' scientific knowledge is held up against 'simplified' popular versions because only appropriately trained scientific experts can understand the complexities of pure science. In order for lay people to understand science, an appropriate go-between – the science writer or science journalist, must translate it into simple terms. Therefore, the problems encountered when lay people disagree with scientists (as in the GM controversy) or when scientists see their research given interpretations in the media they would not agree with tend to be put down to problems of misunderstanding and inaccuracy on the part of the public and media. In other words, scientists are accorded the cognitive authority to develop genuine knowledge which can then be transmitted, or disseminated to other members of society, and must be appropriately translated on the way so that non-experts can understand it.

Science, the media and the public are all seen as distinctly separate entities with different properties that justify the above set of assumptions about their interactions with scientific knowledge. In addition to this, each of them is conceived of as homogenous, with distinctions between each body seen as far more important than those within them. Concepts such as 'understanding' 'communication' and 'scientific knowledge' are understood in simple information processing terms. There are also a number of other assumptions, such as a view of science as progressive and therefore inherently beneficial to society and an idealised view of a rational 'democratic citizen' who would automatically benefit from scientific knowledge.

Following the original pushes for greater public understanding of science, much social research has been carried out examining in detail the processes of interaction between science, media and public. At the same time, parallel studies in history and sociology of science, anthropological studies of scientists at work, and studies of the discourse and rhetoric of science have together led to a very different picture of science than that given by the canonical account. Drawing on such views, many critiques of the canonical account have now been made, showing it to be deeply problematic on many levels (e.g. Dornan, 1990; Hilgartner, 1990; Shapin, 1990; Cooter and Pumphrey, 1994; Gregory and Miller, 1998). These criticisms centre on firstly the hierarchy of knowledge set up between science and the rest of society, and secondly the assumption that knowledge only flows in one direction: from the top to the bottom of that hierarchy.

Critiques of the canonical account have been made on empirical, sociological and political grounds, and emanate from all three of the major areas of study connected to science in public.

2.2.2 Popular and public science

Canonical accounts of science communication often refer, implicitly or explicitly, to the idea that scientists have by various means privileged access to objective knowledge about the natural world. This view of science has been radically challenged in recent years by a large body of research in science and technology studies (STS). Many studies have exposed the enormous amount of social and rhetorical work which must be done in order to develop scientific ideas, get funding to carry them out and then to achieve a consensus with other scientists over what the findings mean (e.g. Jasanoff et al, 1995). Work on multiple scientific cultures and interdisciplinary research has shown how different norms, values, methods and standards of evidence come into operation in every scientific field. According to this view, it is more accurate to speak of 'the sciences' than of 'science' as a single institution, and of scientific truths and methods rather than a single, objective truth and scientific method. Therefore the concept of scientific knowledge which can be misunderstood, misreported, and distorted (generally by non-scientists) becomes problematic, especially as part of a simple 'information transfer' understanding of science communication. As Stephen Hilgartner points out here, popularisation in the canonical account is seen as:

> at best, 'appropriate simplification' – a necessary (albeit low status) educational activity of simplifying science for non-specialists. At worst, popularisation is 'pollution', the distortion of science by such outsiders as journalists, and by a public which misunderstands much of what it reads. (Hilgartner, 1990, p519)

Even the term 'popularisation of science' itself implies some kind of linear process along these lines. The product of a process of popularisation, is, however, 'popular science' and this in many forms has been studied in its own right. Such studies have found that, rather than it being necessarily a simplified form of academic science, popular and academic science look different because they are doing different jobs and saying different things about the knowledge at hand. Scientific books and journal articles attempt to establish legitimacy for their claims by describing in detail the

research methodology used, alongside the work of other people, whilst simultaneously using these same tools to destabilise or discredit the claims of those they disagree with. In contrast to this, popular accounts concentrate on the factual status of the claims made, playing down the roles of detailed methodology and consensus in establishing this as so. This has the effect of reducing levels of uncertainty about the knowledge in question, whilst reinforcing the boundaries between experts and lay people (e.g. Shinn and Whitley, 1985; Collins, 1987; Myers, 1990).

Several case studies have shown that popular communication can play a crucial role in the constitution of knowledge. The most well known of these is probably that of the cold fusion controversy, when two scientists announced their discovery by means of a public press conference, rather than through a peer reviewed paper in a scientific journal. In the earlier stages of the controversy over these claims, scientists used mass media reports and other communication media such as emails, as fast moving alternatives to the slow moving journals in order to keep themselves up to date on the situation. As the controversy headed towards closure, the number of mass media articles dropped while simultaneously levels of technical articles increased (Lewenstein, 1995a). In a study of controversy over the cause of the extinction of the dinosaurs, Elizabeth Clemens (1985) argues that popular communication was crucial to spreading the theory of asteroid impact as a cause of the mass extinction. She contends that the involvement of 'visible scientists' (Goodell, 1977) such as Carl Sagan and Stephen Jay Gould were important in drawing attention to the theory. In addition to this, she argues that the idea of catastrophic destruction of the dominant species on this planet appealed to wider concerns in the 1980s (and today), over environmental degradation and threats of nuclear war, and that this helped in the ultimate acceptance of the theory in both scientific and popular domains.

Historically, scientists have often turned to the public for a number of reasons. Sometimes this has been to help boost a particular theory's appeal in the popular domain, as with the asteroid hypothesis, or because a scientific debate was already occurring at a popular level, as with Darwin's theory of evolution in the nineteenth century. At other times, such 'public science' has been more aimed at gaining legitimacy and greater resources for the wider enterprise of science itself (Barton, 1998; Shapin,

1990; Turner, 1980). To sum up, studies of science in public have shown that firstly, scientists do not have unique access to objective knowledge of nature, but must work amongst themselves in order to reach a consensus about that knowledge. Secondly, discussion of science in the popular domain can and does contribute to this process of constructing knowledge: in other words, there are interactive rather than one way processes going on here. Finally, popular or public science also serves the purpose of advancing the interests of particular scientists, or science as a whole, rather than being 'purely' about the dissemination of knowledge to the wider public.

2.2.3 Science and the media

Many, many trees have been sacrificed in the process of debating the issues around science and 'the media'; both in natural scientists' own deliberations and in research studies in the field of science communication. This research tradition has a much longer history than that of studies of popular science or public understanding of science, and probably because of this seems to be more deeply rooted in the canonical account. However, alongside the rest of the field, many researchers in science communication are becoming increasingly critical of the canonical account, and are searching for different perspectives on how to study the issues raised. As discussed earlier, there is a tendency for scientists and others working within the canonical account to blame the media for producing distorted media coverage of science, and so many studies in this tradition focus on the accuracy of science reporting. However, the 'accuracy' of media coverage is notoriously difficult to measure in any consistent or systematic way. Such studies are often carried out by or for scientific rather than journalistic institutions, and as such, notions of what counts as accurate are correspondingly set by scientists rather than journalists. Furthermore, if there are multiple scientific truths, as research in STS suggests, then there can be no absolute standard of knowledge against which to measure the accuracy of reporting. What may seem like a perfectly fair piece of coverage to one scientist could well look like unfair misrepresentation to an opponent in the same field. Overall, these kinds of quantitative, accuracy based approaches tend to show a lack of appreciation of the differences between scientific and journalistic norms and values, and tend to automatically privilege those of the former over the latter (see Evans and Hornig Priest, 1995).

Several authors have suggested that a more productive strategy might be to adopt a more descriptive rather than normative stance in studying the interactions between scientists and media workers (Dornan, 1990; Lewenstein, 1995b; Scanlon, Whitelegg and Yates, 1999; Weigold, 2001). Looking at the institutional pressures and interests shaping media practices can help us to understand why coverage of science often looks the way it does. It may also reveal what scientists can do when working with journalists in order to improve things, and what things can and cannot be changed about the current situation. Some of the most crucial differences between mass media and the sciences include the fact that the media are much more commercially based enterprises, working at a much faster pace, and with very different attitudes to the validation of knowledge and information. All media forms are in constant competition with each other for audiences' attention, which of course equates with sales, therefor profit and ultimately a continued existence. Aside from the specialist, popular science media,[4] the majority of television, radio, and print press must report on *all* areas of social and political life. Therefore science stories must compete for overall space and airtime with these other issues and cannot expect to receive any more time and attention than journalists and editors decide they merit. This means that there simply isn't the space (for example) to include long, perhaps technical statements from each of the scientists involved in a controversy: those who speak simply and succinctly are much more likely to make it into the final report.

The concept of 'news values' is an important one in understanding how the media deal with scientific stories. Certain properties, for example simplicity/clarity of ideas, so-called 'human interest' and controversy are seen as having (and probably do have) more appeal to audiences, creating a bias towards publishing stories that have these qualities. Other, more non-commercial values such as fairness/impartiality and quality of reporting are also very important and can affect scientific coverage, for example by making scientists with very little credibility within academia appear to be arguing with the scientific 'establishment' on a equal basis (Dearing, 1995). Others, such as journalistic commitments to question the accepted truths put forward by authorities, or to expose 'suppressed' information, can bring the media into direct conflict with

[4] Examples might include the magazine *New Scientist*, or the BBC science documentary series *Horizon*.

science.[5] Despite such issues, it has also been argued that there is an overwhelming culture of deference to science in the media. Claims made by scientists are rarely subjected to the same levels of scrutiny as those of politicians, or even other academics in the social sciences or humanities (e.g., Nelkin, 1987). This is partly due to popular understandings of scientific knowledge as certain, objective truth, stemming from the canonical account.[6]

Most media forms operate on strong divisions of labour, due to their size and breadth of remit. Work is broken down according to subject or journalistic 'beat' (e.g. politics, medicine, social affairs etc.) and also according to the kind of work being done (news and features journalism, editing). A particularly strong division of labour, at least in the US and UK, is that between science journalists and others. Although journalists tend to change beat several times over the course of their careers, they are much less likely to change from a non-science to a science journalistic beat, and if they do they are more likely to stay with their new subject. Science journalists and science writers have also formed very strong professional bodies, particularly in the US. This has contributed to these specialists working very closely with each other and their sources, which can lead to somewhat uniform coverage and a tendency to subscribe more closely to the values and interests of scientific institutions.[7] The role of media 'gatekeepers' such as editors and TV/radio producers is also very important in shaping media coverage of science. Such gatekeepers decide which items do and don't get published or aired to reach the public, as well as their final form. They place an even higher priority on news values than journalists do and are less likely to have any kind of specialist knowledge about science (Dunwoody, 1980).

The vast majority of people who work in the media tend not to have had any kind of scientific background or training. Traditionally even specialist science journalists tended to be journalists interested in science, rather than scientists interested in journalism,

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[5] An example of this might be the continuing public controversy between evolutionary biologists in the USA and creation scientists / intelligent design theorists, (see, Locke, 1994; Park, 2001).

[6] This particularly illustrates how wide acceptance of the canonical account is not merely an issue of academic concern, but also of real power and consequence in wider society.

[7] As I have argued, when looking 'inside' such institutions, it can be seen that such values and interests are not in fact unitary in any way: however, in the public domain, canonical views of science are much more widely held. As such, when interacting with the 'outside' world of the public domain, scientists tend to try

although this trend has reversed in recent years (Hansen, 1994). Paradoxically, this can contribute to both the critical and uncritical tendencies in media coverage of science. A non-scientific background means that media workers are not going to give science stories the priority that scientists might wish: however, media workers are less likely to greet claims made by scientific 'outsiders' with the same scepticism as scientists might. A preference to defer to the knowledge of experts in reporting leaves people working in the media ill equipped to deal with the partial nature of scientific knowledge, particularly in cases where the issues at hand are being strongly debated by the scientific community.

This paradox could perhaps be explained by Mackenzie's (1998) concept of the 'certainty trough' in scientific and technological knowledge. Mackenzie found that those close to the site of knowledge production (in this case scientists and engineers) expressed more uncertainty about that knowledge than those a little further away (managers), while people who were at a considerable social distance from the knowledge expressed the highest levels of uncertainty about it. In science communication terms, it could be argued that these three groups correspond to science journalists, generalist journalists or editors and the wider public. Science journalists possess enough 'insider knowledge' of science to express scepticism about certain knowledge claims, while generalists do not have the time or resources to do this and must therefore trust the claims made by experts more easily and indiscriminately.

An issue that has so far been under explored in the literature on science and the media is that of the heterogeneity of 'the media'. Each form of media (TV, radio newspapers, etc.) has a unique mix of pressures on it, leading to a different combination of news values shaping the coverage produced in each case. What makes a good tabloid news story is different to what makes a good television programme and is again different to what makes a good subject for publishing a book on. This is also true *within* any given media form as well – for example in a broadsheet paper what makes a good front page news story will be quite different from what makes a good article to put in the Sunday supplement. Therefore, the kinds of science that get covered, and the way

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and behave *as if* their interests are unitary, while scientific institutions such as the UK Royal Society also work hard to foster canonical views of what 'science' is.

that they are treated will vary greatly between different forms of media.[8] The particular way in which the mass media are organised also varies from country to country and consequently affects the ways in which science stories are covered. However, most research done to date has looked at the US and, to a lesser extent, UK mass media, rather than considering science and the media in more global contexts.[9] In a similar manner, research to date on science communication has been biased towards newspapers, television and magazines, with a tendency to ignore the importance of other forms such as radio, museums and popular science books, as well as fictional presentations of science (Lewenstein, 1995b). These issues of heterogeneity are now starting to be engaged with, but there is still a tendency to lump together all media forms when analysing case studies and to assume that studies done in the US/UK will be fully applicable elsewhere.[10]

To sum up, criticisms of the canonical approach to science communication fall into two different categories. Based on detailed studies of how media and journalists handle the sciences and their findings, one strand argues that canonical approaches are not so much wrong as very unhelpful. Because they are carried out from the perspectives of the sciences and their institutions, canonical approaches ignore the norms and priorities of the media. This particularly means that they cannot distinguish between things that are particular to the way that media deal with *science*, and wider structural features of media practices that are unlikely to be changed easily, especially as a result of outside pressure. Furthermore, such an approach is unreflexive, leaving unexamined what scientists themselves can do to improve the situation, and is likely to exacerbate differences (and antagonism) between the sciences and the media. A related, but more elementary strand of criticism centres on issues around the nature of knowledge itself. The canonical account views scientific knowledge as an uncomplicated 'truth': a view that is now strongly contested by research carried out in STS. This means that the whole concept of the 'accuracy' of media reporting of science becomes a great deal more problematic than was previously thought. Studies of popular science, described

[8] This is a point brought home very strongly to me in my own fieldwork with people working in the media; see also Lewenstein (1995b).

[9] Increasingly, research is now being done on science communication in more global contexts: see the journals *Public Understanding of Science* and *Science Communication* in recent years

[10] Because of this, when for brevity's sake I use the term 'the media', I try and use it in a plural sense wherever possible.

above, show that the idea of 'popularised' science as being a watered down, distinct version of 'real' science is false. This also indicates that closer attention should be paid to the processes leading to the production of popular science, in the mass media and in other forms. The hope is that such an approach may help to initiate a more productive dialogue between these very different social institutions, based more upon mutual respect and co-operation, rather than suspicion and blame or deference and contempt.

2.2.4 'Public understanding' of science

Underlying much of the debate about popular science and science communication is the issue of what people in the rest of society: the audiences for media, targets of popular science, voters and taxpayers think and know about science. It is because the media provide such crucial forums for public debate and opinion formation in the modern world that scientists care what gets said about their work there. As described earlier, a major concern of scientific institutions in recent years has been to try and find out what the public knows (and thinks) about science, largely in order to try and increase knowledge and change opinions. Such concerns subscribe fully to the canonical account, with even the term 'public understanding of science' implying unequal power relations between monolithic, separated entities. The main aim of such efforts is to get the public to understand science, leaving no room for suggestions that science could need to understand the public a bit better, or that some kind of two-way dialogue might be at all helpful.

It is perhaps in the area of research on the public understanding of science (PUS), that the canonical account was first and most strongly questioned by social researchers. Fundamental issues around hierarchies of knowledge are just as much, perhaps even more at stake here as in debates over popular science and science communication. As with other critiques, criticism of what is known in this area as the 'deficit model' [11] started with the canonical assumption that non-scientists are passive recipients of scientific knowledge, extracted by scientists directly from the natural world. Likewise, the implicit assumptions of 'science' as a unified body that can be understood

[11] So called because the solution to the problems of PUS is commonly seen as lying in 'filling in' the deficit of public knowledge about science.

coherently as such, and of 'the public' as an undifferentiated, ignorant mass have also been strongly attacked by researchers in the social sciences. Finally, critics have also pointed out that canonical meanings of the word 'understanding' are highly confused, confounding together issues of public interest in, appreciation or approval, and actual understanding of science (e.g. Dierkes and von Grote, 2000).

For many years, most of the research carried out in this area consisted of large scale, quantitative surveys. Many of these were somewhat like exams, asking people about specific bits of scientific knowledge and offering the respondent a choice of three or four answers: for example, "What causes acid rain?". Other questions are left more open, such as "What does it mean to study something scientifically?", and sometimes questions are asked about respondents' interest in and attitudes to science. Notoriously, such surveys tend to find very low levels of 'scientific literacy' and generally prompt lots of handwringing amongst scientific bodies and policymakers, followed by yet more calls for increased efforts at public education (e.g. Durant, Evans and Thomas, 1989). However, this approach to studying the public understanding of science has a number of quite severe limitations. Questions like the acid rain one generally give a number of options, with the 'correct' one being quite specific. This ignores the fact that often there is still considerable uncertainty amongst scientists themselves about what the 'correct' answer might be, and also that it is in itself a simplification of the full scientific explanation. In addition, one of the other options is often a more general answer like 'pollution' - an answer that is deemed incorrect although it isn't really, just less specific. With such questions, the closed format leaves no room for the respondent to explain their reasons for answering the way they do, or to explain what they think the question means (Wynne, 1995).

Questions about the processes of science are beset with even more problems. Such questions are sometimes presented in an open, abstract format that only a very few respondents manage to get 'right'. However, when given concrete examples to think about, many more people can answer 'correctly'. Furthermore, these kinds of questions rely upon a very specific concept of an abstract 'scientific method', based on the ideas of the philosopher Karl Popper. These ideas have only been popular amongst scientists since the latter part of the 20th century and, as discussed above, research in the sociology

of science has shown that they do not generally operate during the everyday practice of the sciences. Therefore, such questions are not asking people how much they know about how science works, but to what extent they share the values and ideology of scientists (Bauer and Schoon, 1993). In many ways, the problems faced by quantitative approaches to researching public understanding of science are very similar to those faced by attempts to measure 'accuracy' in media reporting of science. There is a similar tendency to work from the canonical perspective of scientific institutions, adopting such values and norms along the way. On a broader level, both also face the limitations of taking a broad-brush, quantitative approach to studying extremely complex, nuanced sociological issues.[12]

Partly in response to the shortcomings of the survey approach, a great deal of research has now been carried out using qualitative sociological and anthropological methods, studying the different ways in which so-called lay people deal with scientific knowledge. These have given a very different picture of these interactions than that offered by studies based on the deficit model. Furthermore, such 'critical' PUS studies have provided some of the strongest empirical evidence of the inadequacies of the canonical account. In his definitive study of relations between Cumbrian sheep farmers and government scientists in the aftermath of the Chernobyl nuclear explosion, Brian Wynne (1992) showed why farmers responded so negatively to scientific advice about radioactive fallout. One of the most important factors in this case was the presence in this area of the Sellafield/Windscale nuclear reprocessing plant, and its long history of safety problems, accidents and discharge of radioactive waste. It turned out that one of the areas identified as being badly affected by fallout from Chernobyl happened to be the same as an area long suspected of being contaminated by waste deposits from Sellafield. This coincidence prompted suspicions that the effects of fallout from the accident in Russia were being allowed to mask other, long-term effects of waste from the local plant. Furthermore, the long coexistence of the hill farming communities and Sellafield meant that government scientists were seen as having their own agenda and were not trusted because of this. Finally, the scientists ignored farmers' expertise about their land and the local environment, leading to many incorrect predictions about the

[12] This is not to say that such broad-brush indications are of no use whatsoever, merely that they can be inadequate when used on their own.

consequences of the accident. This, combined with an unwillingness to acknowledge such mistakes whilst continuing to 'reassure' locals also contributed to the problems experienced.

In addition to such breakdowns in trust, there are other situations where it is actively in people's interests to *not* engage with science, and instead to positively construct or adopt ignorance of certain issues (Michael, 1996). For example, in a study of workers at the Sellafield plant, Brian Wynne (1995) reports how such workers strongly claimed ignorance of the science of radiation risk, despite their daily exposure to radioactivity. This was for several reasons: they did not have the time to follow the complexities of scientific debate in the area and to do so would force them to confront the inherent uncertainties of their work. Such behaviour would also challenge the expertise of those people whose job it was to follow and manage the risks involved, disrupting the social relations of the organisation. Other research carried out by the sociologist Mike Michael (1992) has shown how the responses of interviewees to questions about scientific knowledge and attitudes to science can vary enormously. If asked about their attitudes to science as a wider enterprise, what Michael terms 'science in general', people would respond very differently than if they were asked about specific scientific issues. Research carried out in this tradition has shown how factors such as the social context and relevance of a particular piece of science to the person in question, as well as how much the particular scientists are trusted, are crucial in understanding why people accept or reject scientific explanations.

When examined closely, it rapidly becomes apparent that the distinction made between experts and lay people is nothing like as clear as is made out in canonical accounts. Several intriguing case studies have also shown that when the need arises, lay people can and do readily engage with complex scientific information, even actively involving themselves in scientific debate when necessary. This is especially true of patients suffering from serious or unusual diseases, their relatives, and groups set up to offer mutual support and exchange of information amongst such people. In these situations, people often find themselves knowing far more about their disease than some 'experts' such as GPs. Patient support groups also often actively campaign for increased funding on behalf of particular research approaches to the disease in question.

Furthermore, Epstein's (1995) research with AIDS patients and activists/patient groups in California found that the patients became so actively involved in the drug trials they participated in that they contributed to the design of the successive trials. This again demonstrates the patent falsity of the canonical account's assumption of a one way knowledge flow from expert to layperson. As well as showing that 'the public' is not necessarily ignorant or stupid, such work crucially gives the lie to the belief that specialist communicators (i.e. science writers) are always required to 'translate' scientific knowledge into a form lay people can understand.

Conversely, other research has shown how just as 'lay people' can easily become 'experts', most scientific 'experts' actually have little better than a 'lay' knowledge about other disciplines than their own. As Levy-Leblond (1992) points out, the increasingly massive specialisation of scientific disciplines means that a specialist in any particular sub-discipline is likely to know about as much about an unrelated field as any 'lay' non-scientist. If 'borderline' experts like science writers and journalists, teachers, and people trained in science, but pursuing other careers are considered, then the expert-lay boundary dissolves altogether. In fact, many authors suggest that such distinctions help serve the purpose of increasing the legitimacy of scientific expertise (e.g. Gieryn, 1983).[13] In a similar vein, several studies have examined the rhetorical construction of canonical accounts of the public understanding of science. Again, these studies have demonstrated how such accounts are rhetorically constructed in order to advance the interests of science and scientific institutions in wider society (Gross, 1994; Locke, 2002). As with newer research on science communication, which attempts to engage with the different forms of media on their own terms, recent approaches to PUS research seek to do the same for the many 'publics' of science. They examine in detail the values and interests of real people engaging with science in real situations, rather than invoking 'the public' as an undifferentiated, ignorant mass. This research also emphasises the diversity and heterogeneity of these publics and attempts to get to grips with what this means for relations between science and the rest of society (Einsiedel, 2000; Felt, 2000; Michael, 2002).

[13] These links between legitimacy, expertise, boundaries and the public domain will be explored more fully in Chapter Seven.

One of the key assumptions of the canonical account is the idea that the more people know about science, the more they will approve of it, trust scientific experts, and share the aims and values of scientific institutions. However, research on this point has shown that the relationships between these factors turn out to be much more complicated and subtle when examined closely. To start with, it seems to depend on which particular bit of scientific knowledge is being looked at as to whether it changes people's attitudes to science. Other surveys have found that those with the strongest opinions (either pro or anti science) were the most likely to be knowledgeable about it (Turney, 1998). Finally, research carried out by the Wellcome Trust (1998) directly examined the relationship between knowledge and attitudes to science. Focus groups were carried out in which people's attitudes to cloning research were investigated. The same groups of people then underwent 'education' sessions about the science of cloning, and subsequently attended another focus group about attitudes. During these focus groups, it was found that people had not only not changed their opinions from earlier, but were also mobilising the new knowledge they had acquired in defence of their previous arguments.

On the whole, recent research on 'science in public', whether it looks at issues of public understanding, science in the media or popular science in a wider sense, all agree about certain key points of the canonical account. In whichever guise, canonical accounts worked and were designed to work to the political interests of science and scientists, helping them gain cognitive and social authority, resources and status in wider society. They were largely of normative ones about how relations between science and society *should* work, and paid almost no attention to how such relations actually do work. Although newer research could not by any stretch of the imagination be said to have settled this issue, attempts have been made to rework the models implied in this work in ways that are more realistic. Such attempts will be discussed in the next section.

2.2.5 Models of science in public

In a recent report on science and the media commissioned by the UK Economic and Social Research Council, an entire chapter is devoted to a discussion of models, or 'maps of misunderstanding', of relations between science, media and public (Hargreaves,

2000). In the years since the critical turn in studies of science in public, our understanding of these relations has become more sophisticated and consequently models have proliferated, as researchers try to formulate new versions that can cope with critiques of the canonical account. In this section, I will initially re-describe the canonical account in the form of a visual model that makes clear how the knowledge relationships between science, media and public were understood. Following this, I will describe several attempts that have been made at creating restructured models of these relationships, which can take account of the many criticisms made of the canonical account. I will argue that all of these attempts have, however, been flawed in some way and will outline these problems in turn.

The canonical account itself seems to have rarely been explicitly visualised, but can easily be constructed into a diagram from the large amount that has been written about these issues from canonical perspectives. As I described earlier, such accounts describe a hierarchical model with a small scientific elite at the top and a large mass of 'the public' at the bottom. Knowledge flows down this model somewhat like a waterfall, with the media sitting in the middle conveying scientific knowledge from one group to the other. The following diagram describes roughly what this might look like, where the arrows indicate this flow of knowledge through society.[14]

[14] This diagram has been adapted with many thanks from Irene Rafanell's current theoretical work on subjective experience and consensus formation (Rafanell, 2002).

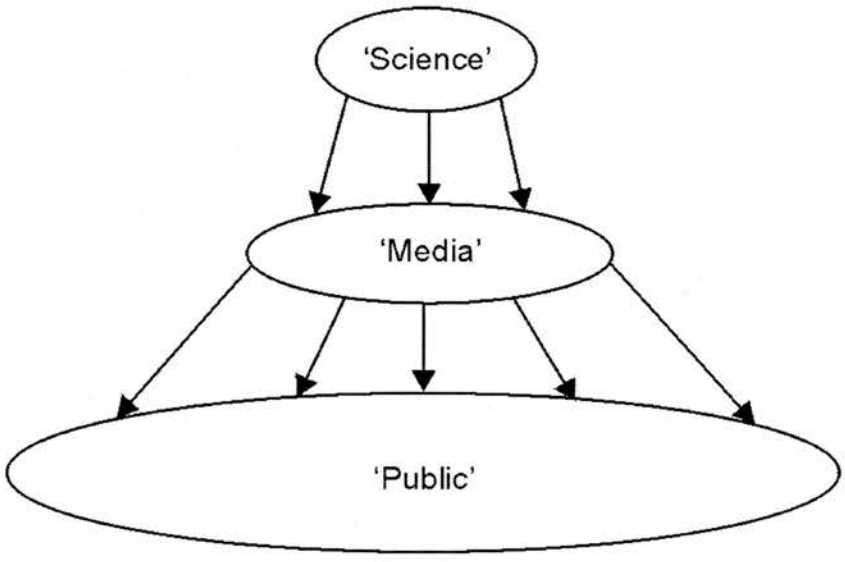

Fig. 1: Canonical, 'dissemination' model of the knowledge relationships between science and society

Looking at this model helps to explain why traditional discourse about the problems of science in public tends to run towards what historians Roger Cooter and Stephen Pumphrey (1995, p249) describe as 'the watery analogy'. This metaphor brings with it ideas about the diffusion, dilution and contamination of 'pure' scientific knowledge when it becomes 'popularised'. It also tends to foster simplistic, information transfer views of science communication, ignoring the complex and skilled work done in crafting different forms of knowledge and making it far easier to blame problems on the 'inaccuracy' of the media. As has been reviewed in this chapter, subsequent research has provided evidence for strong critiques of the canonical model, but there have been relatively few explicit attempts to devise alternatives. Today, the majority of academics working on science in public research hold broadly 'interactionist' views of how science, media and public relate to one another, but it is specifically within studies of science communication that the most direct attempts at model (re)building have been made. Maybe this is because science communication is directly concerned with understanding the movement of knowledge, whilst research in the areas of public understanding and popular science tend to be more concerned with people's relationships and interactions with knowledge. However, this is not to say that a more explicit realisation of such models could not help research in both areas.

The most sustained attempts at developing a restructured, interactionist model have come from the work of Cloitre and Shinn (1985), and building upon it, that of Bucchi (1996; 1998). Cloitre and Shinn identify a 'communication continuum' from specialist to popular scientific communication, showing how such communication cannot be clearly divided into 'genuine' scientific knowledge and 'distorted' popularisation (Hilgartner, 1990). Within this continuum, they identify four main stages: intraspecialistic, interspecialistic, pedagogical and popular. These stages can be characterised as scientific journal articles; conference papers and articles in multidisciplinary journals; textbooks and histories of science; and finally 'popular science', including science news coverage. As knowledge moves from one end of this continuum to the other, facts acquire an increasing solidity and certainty. The prominence given to empirical data and experimental methodology becomes less, whilst that of theory and metaphorical imagery becomes greater. Cloitre and Shinn also make their model much more flexible than a canonical one by suggesting that knowledge can move in both directions along the continuum and can feed back from the popular to the specialist stages. They also argue that the stages need not proceed sequentially, and one or more may be missed out in particular cases. Bucchi (1996) has sketched out a visualisation of the continuity model, which has been reproduced here (the narrowing shape of the funnel is designed to represent the increasing levels of certainty in knowledge as it moves along the continuum).

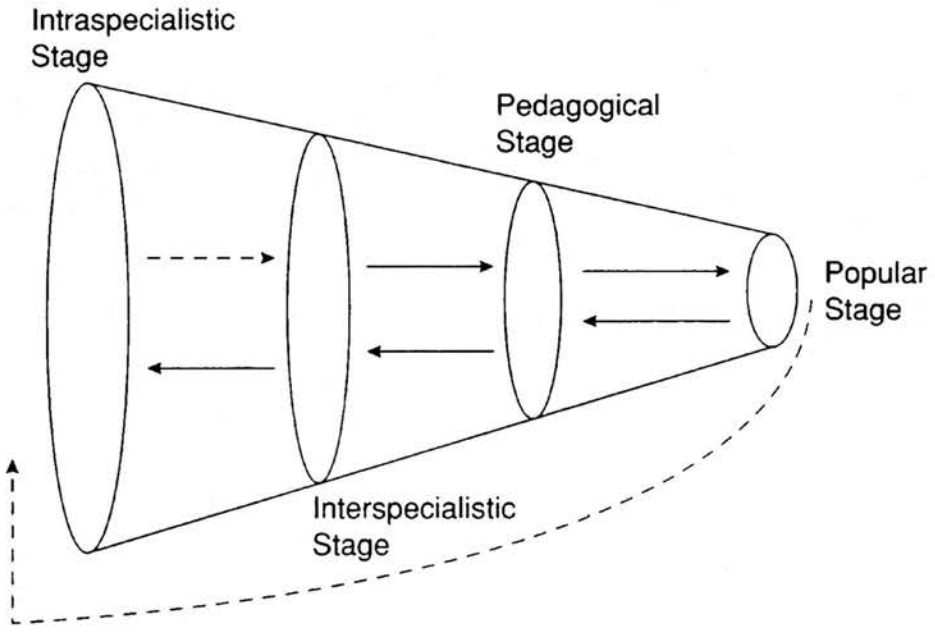

Fig. 2: 'Continuity model' of science communication (reproduced from Bucchi, 1998, p13)

This is a great improvement upon the canonical model, but still leaves a number of problems unresolved. Most strikingly, although the top down imagery has gone, scientists are still seen as belonging at one end of this continuum, with mass media at the other, and the public quite literally out of the loop, perhaps floating somewhere off the end of the popular stage. Secondly, although Cloitre and Shinn break down the more scientific forms of communication into three separate stages, all other forms are lumped into a single stage entitled 'popular'. This means that despite all the efforts to the contrary, the net result is a model which still privileges (or at least pays far more attention to) a scientific perspective over any other.

The work of Massimano Bucchi (1996; 1998) has attempted to address some of these concerns by building on Cloitre and Shinn's (1985) concept of 'deviation' – what happens when an idea skips one or more of their communication stages. Bucchi argues that during such cases, 'public discourse of science does not simply receive what filters through from the preceding stages: it may be at the very core of the dynamics of scientific communication.'(Bucchi, 1996, p381). With the help of several detailed case studies, he argues that situations 'when scientists turn to the public' are often linked to

the definition and negotiation of scientific boundaries. When a controversy involves several disciplines with different practices and standards of evidence, or a research area lacking legitimacy for some reason, then it cannot be easily resolved through the usual channels of journal articles and conferences. In such cases, a move to more popular forms, with their increased rhetorical power and reduced reliance on empirical data, can help to resolve the controversy. As well as giving new answers to the question, 'why popular science?', Bucchi's work is invaluable in further breaking down the canonical model of science communication. However, by sticking with the term 'deviation' in this model, the normative canonical perception that popular or public science is somehow disreputable or abnormal is left unchallenged, as is the basic concept that science belongs or exists at some remove from the rest of society.

Abandoning both canonical and continuity models, Bruce Lewenstein's (1995a) case study of scientific communication during the cold fusion controversy results in the formulation of a communication web or network, with "all forms of communication leading to each other"(p426). The case study showed how during the early stages of the cold fusion controversy, scientists relied upon very different sources of information from their usual ones of peer reviewed journals. Crucially, this included all the reporting on the subject carried in the mass media, because at that time they moved at a rate that matching the speed of scientific developments. Lewenstein then formulates a model of science communication for this case, illustrating how the mass media played a central role in the production of knowledge. He usefully shows how different forms of science communication all mutually influence on another in a way that cannot be spread out into a continuum. However, his replacement 'web' model of communication (p426) seems overly complex and confusing, describing the specifics of the case well, but it is hard to see how it could be of analytical value for any other situation. In addition to this, although Lewenstein pays great attention to the different forms of *scientific* communication going on, such as journals, email, talks, meetings etc., in this model he still reduces the 'mass media' into an undifferentiated lump. During the paper, he refers to both television news and print newspapers, but makes no real distinctions between them (were both equally important? was the coverage the same? which did the scientists use more?). He also fails to make a distinction between news and other mass media coverage of science; in this case, it *seems* that news coverage was more important, but

this is left as an assumption. Was there any more in-depth coverage of cold fusion as features, or in wider popular science coverage, and if so, when did it occur?

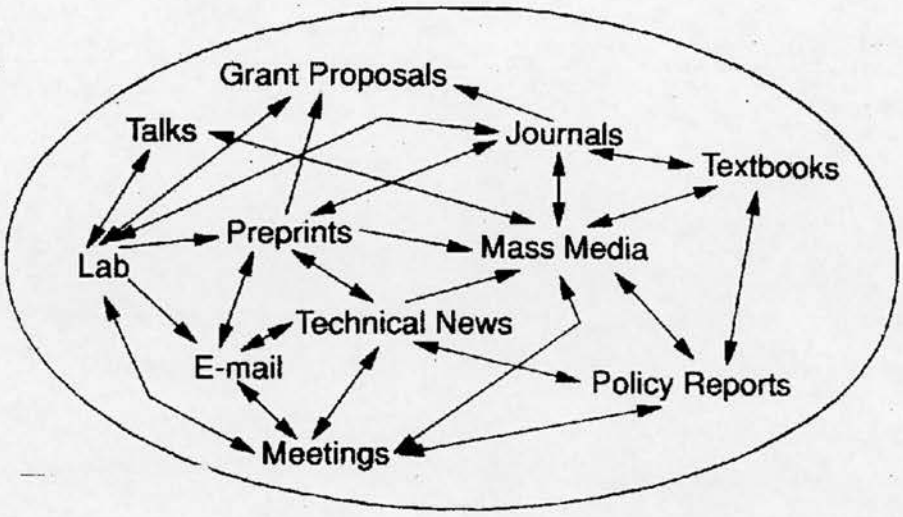

Fig. 3: 'Web of science communication contexts' (reproduced from Lewenstein, 1995a, p426)

In an alternative approach to a 'science and the media' case study, Neresini (2000) carried out an actor/network analysis of public debate over cloning which took place in the Italian press after the birth of Dolly the sheep. He maps the major participants in this debate as well as the various issues related to cloning under discussion, showing how these changed over time as different actors 'translated' the cloning issue towards their own concerns. This analysis was successful, in that it showed the differing roles of scientists, politicians, the Church and crucially, public opinions and journalists in shaping the debate. Towards the end of the analysis, he produces a diagram of the actor/network around discussion of Dolly, which could be seen as another form of model. This model is useful because it shows how the different actors were related to one another and to the issues under debate and clearly demonstrates how scientists were only one group among many contributing to the discussion. However, because of this exclusive focus on actors and issues, the analysis seems again to ignore the heterogeneity of scientific, public and journalistic groups, other than making a simple distinction between those groups 'for' and 'against' cloning. It is hard to see how the complex web of issues described earlier in the paper could break down to such a simple

representation. Furthermore, the priorities of the media form carrying the debate (newspapers) seem to be mostly lost in the focus on actors and ideas.

More explicit formulations, understandings and critiques of the canonical model in science in public research has led towards a search for new ways of representing our understanding of relationships between the sciences, media and publics. Although most researchers are happy to work within a theoretical framework that sees these groups as broadly interacting together on an equal basis, several attempts have been made at formulating new models. Each of these have been formulated around a particular case study or idea, and although all have their flaws, it could be argued that what they actually do is each look at a different aspect of interactions between science, media and public.[15] The Bucchi/Cloitre and Shinn model is concerned with information flow and the certainty of knowledge; Lewenstein's is about the forms of communication in use; while the Neresini model focuses on actors and issues of concern in public debate in the media. One thing that they do seem to share with canonical models is a continued lack of emphasis on the agency of media workers and public groups and this overemphasis on the science may be a difficult one to avoid (see Wynne, 1995 on this issue). What is needed for the future of research in this area is a an approach to formulating models that can be of help in guiding new research, yet is sufficiently flexible to accommodate the hugely complex and multiple ways that scientific, media and public actors interact together in our society. In the next section, I will introduce such an approach, in the form of social worlds theory, and will demonstrate the ways in which I believe it can take the project of model building forward.

[15] Thanks to Jane Gregory (personal communication) for this very interesting and useful suggestion.

2.3 SOCIAL WORLDS THEORY

Having reviewed the current situation in research on popular science, science communication and the public understanding of science, the problems it faces and the attempts that have been made at reformulating theoretical models in this area, I would now like to move on. At this point, I will introduce a theoretical approach to social research, which I feel has great potential for application in 'science in public' research, and may be of help in solving some of the problems encountered in this area. Social worlds theory (SWT), is in many ways as simple as it sounds: an approach that looks at social life and activity- in terms of the groups and organisations that help to bring it about. This allows the actions of individuals to also be seen in these terms, helping to bring together different levels of analysis in a single piece of work. In this section, I will firstly describe SWT as it was developed in the middle part of the last century by American sociologists in Chicago, its main precepts and how I think it fits into wider debates over social theory. Secondly, the ways in researchers in the area of science and technology studies have developed SWT, including their focus on the mechanisms that allow diverse social worlds to co-operate and communicate will be discussed. Finally, I would like to develop further ways in which SWT could be of help in carrying out 'science in public' research, in particular with respect to attempts at reformulating models used in this area.

2.3.1 Social worlds

Social worlds theorists are interested in the roles social groups play in forming society through shared understandings and collective action. The sociologist and historian of science Adele Clarke defines social worlds as:

> groups with shared commitments to certain activities, sharing resources of many kinds to achieve their goals, and building shared ideologies about how to go about their business. (Clarke, 1991, p131)

Social worlds theory was first developed out of the Chicago tradition of symbolic interactionist sociology in the 1950s and 1960s. This tradition was focussed around studies of local communities within the Chicago area, and over time started to look at

workplaces and professional organisations (Fisher and Strauss, 1978). This tradition of community studies was then developed into an explicit 'social worlds' perspective, which stresses the importance of shared perspectives and commitment within a group forming the basis for action (e.g. Shibutani, 1955; Becker, 1960; Strauss, 1978). Social worlds can come in many forms; as well as the more classical communities and workplaces, the perspective can also be used to study areas of industry and manufacturing, as well as social movements for change such as the antinuclear movement, or movements for reform within workplaces (e.g. Blumer, 1978).

An important feature of social worlds is their *fluidity*. Rather than being fixed, exclusive entities, it is understood that people have multiple memberships of many worlds at the same time, and that a person can vary in their involvement in a world from being peripheral to highly central. For example in a school, someone could be both a staff member and a parent, and their level of involvement with the school would also vary according to whether they were a cleaner or the school head, how many children they had at the school, and whether they were a member of the PTA or not. This can help to explain why people may act in different and sometimes contradictory ways in different social situations. Social worlds also often contain many 'subworlds' within them and can overlap, sometimes forming new worlds in the process: to continue with the example of the school, it is comprised of the subworlds of staff, students and parents, all of which are further subdivided organisationally. This is a situation also subject to change over time as people enter and leave the school, and outside factors contribute to relationships between the different subworlds. Therefore, rather than forming a static, simplified picture of a given social situation, social worlds theory helps to build up a dynamic model in which changes over time and the complexity of relationships are seen as fundamental to reaching an understanding of the research topic.

Because social worlds are exactly that (i.e. social), the people who contribute to them must work hard in order to create and maintain the identity of their world, as well as its relationships with other social worlds. This work is important for maintaining the shared perspectives and resources that keep the members of a social world working together.

> Very important activities within all social worlds are establishing and maintaining *boundaries* between worlds and gaining social *legitimation* for the world itself. These processes involve the social construction of the particular world and a variety of claims-making activities. (Clarke, 1990a, p20)

Another important concept in social worlds theory is that of the 'arena'. This is the space in which the social worlds concerned with a particular issue come together and interact. So the social world of the school interacts with other schools, colleges, universities, education authorities, politicians etc. in the arena of education. The perspective can zoom out even further to that of the 'domain', which is the space in which related arenas exist: in this context, the domain would be the wider concern of education.[16] So it can be seen that, not only are social worlds dynamic and flexible, they also have the property of nesting within one another according to the scale at which you look. This happens from so-called 'micro' scales of individuals interacting, through the collective action and interaction of groups or social worlds right up to wider levels of social structure. Barry Barnes (1995; ch.3) has argued that interactionist social theory can recognise how the combination of social interaction, collective action and the resources of shared knowledge can lead to wider social structures and norms. This allows interactionism to successfully transcend the problems of and traditional debates in social theory between individualists, structuralists and post-structuralists (see also Strauss, 1993, chs.1 and 9).

2.3.2 Scientific social worlds

During the late 1980s and 1990s, a number of scholars in the area of science and technology studies (STS) adopted a social worlds perspective. The sciences are an area of society which lend themselves particularly well to social worlds analysis, in that they are well organised groupings of people with shared values and ideologies devoted to the common goal of the production of knowledge (Gerson, 1983). A social worlds analysis also embodies well the understanding in today's science and technology studies that science is not a monolithic, homogeneous enterprise, but is comprised of many different sciences, each with different 'scientific methods', modes of practice, standards of evidence and so on. Following this, the many social worlds of science are argued to

[16] See Strauss, 1993, ch.10 for a good discussion of this issue.

interact in arenas based around the subject matter they claim, which is of course subject to change over time. This view also easily allows for the analysis of interaction between scientific and other, non-scientific social worlds, again allowing for an easy recognition of the modern STS understanding of science as a fully embedded part of society.

It is probably because of social worlds theory's emphasis on the organisation of groups and on processes of change that most studies of scientific social worlds have focussed on disciplinary change and development. A good example of this is seen in Adele Clarke's (1998) study of the formation of reproductive science in the USA in the late 19th and 20th century. She starts with the three academic areas in which research on reproduction had been done prior to reproductive science's emergence as a coherent social world: physiology, medicine and agricultural science. The aims, problems and practices of each of these worlds were examined to see how they became allies working together rather than competitors. In order to understand how this area of research coalesced into a single enterprise, Clarke looks beyond the 'internal' issues of these three academic disciplines to the many other social worlds that were concerned with reproductive science at this time. She shows how the research area achieved legitimacy through a combination of factors, including a shift to a more fruitful research focus, professionalisation and industrialisation of the sciences during this period, the emerging birth control and eugenics movements, and wider aims for better control of reproduction in both animals and humans. By doing this she also illustrates how social worlds theory, by attending to, 'scientific problems, concrete scientific work, institutional settings, and structural conditions, dissolves the 'internal' (cognitive / intellectual) versus 'external' (institutional / economic) distinction in science studies' (Clarke, 1990, p34).

Star and Griessemer (1989) and Fujimura (1988; 1992; 1996) have further developed social worlds theory in science studies by combining it with Latour (1987), Callon (1985) and Law's (Callon and Law, 1982) notion of *interessement* to develop models of how diverse social worlds co-operate to do scientific work. In Latour's actor/network theory, *interessement* describes the process by which a scientific entrepreneur enlists the help or support of a range of 'allies' by reinterpreting or translating their concerns and interests in terms of 'his' own goals. As Star and Griessemer (1989) point out, one of

the biggest problems with this is that it tends to see the process largely from the point of view of a single scientist, as in Latour's (1988) study of Pasteur's work on microbial theory. This not only helps to reify a 'great man' understanding of science as the work of lone geniuses, rather than as a social, collective enterprise, but tends towards very warlike imagery, with 'allies', 'negotiation' and conquering going on all over the place. This singular viewpoint also has the effect of privileging the points of view, values and interests of scientific over non-scientific actors (Fujimura, 1992; Kondo, 1990). By contrast, the social worlds approach to science seeks to understand how the members of *many* social worlds enrol one another simultaneously to serve their mutual interests, attempting to present the multiple perspectives of those worlds.

This can be especially helpful when looking at interdisciplinary issues, or situations concerning both scientific and non-scientific actors. For example, in Star and Griessemer's (1988) case study of the history of a research natural history museum, they look at the social worlds of the scientist/director, university administrators, amateur naturalist/benefactor, scientific clubs, and animal trappers. They describe this as an ecological approach, or as 'institutional ecology' (Star and Griessemer, 1988, p389; c.f. Hughes, 1970), modelled loosely on concepts of ecology used to study the natural world. This again emphasises the dynamic nature of a social worlds approach, which contrasts strongly with the tendency of actor/network analyses to produce a static 'snapshot' of the area being studied. Actor /network approaches have also been criticised as having trouble in engaging with wider social, political and economic issues of relevance in studying science and technology (Star, 1991; Winner, 1993). In stark contrast to this, approaches such as Clarke's explicitly attempt to bring into their story precisely these kinds of issues. In the case of the early reproductive sciences, this included reproduction being seen as an illegitimate, even 'dirty' subject until well into the twentieth century, and therefore reproductive science faced considerable barriers to establishing itself as a respectable research discipline (Clarke, 1990b).

In a similar manner, the social worlds approach can also address the tendency of actor/network analyses to follow the networks of the powerful, flattening out power differentials and even ignoring the less powerful or visible actors. SWT explicitly seeks to address this problem by paying attention to all the people involved and implicated in

a social world, and by treating the distribution of power as, 'an empirical question to be addressed' (Clarke, 1998, p267) in research. Karin Garrety (1997) looks at controversies in the 20th century over links between dietary fat, blood cholesterol and coronary heart disease, explicitly comparing the actor/network and social worlds approaches to analysis. As well as mentioning many of the issues discussed here, she concludes that the social worlds approach is far more suitable for the analysis of protracted and ongoing scientific controversies like the cholesterol one. The social worlds theory conception of a continuously negotiated social order, with its allowance for the complexity and ambiguity of allegiances, is of considerable help when dealing with an area of science where the 'facts' are very uncertain. She found that an actor/network approach was of some help, but struggled to deal with these issues and had no means of putting the actors' negotiations into any kind of wider social context (Garrety, 1997).

Having described what social worlds are, I have also mentioned that they must interact with one another constantly. This interaction can take the forms of both conflict and co-operation, but in both cases, communication must take place in order to establish such positions and to continue negotiating and renegotiating them. So how is it that social worlds do this? By definition, they have very different values and interests, so how do social actors translate their own and others' interests to the point that mutual understanding and co-operation (or alternatively misunderstanding and conflict) can occur? This question is one that has been addressed very closely by symbolic interactionists working within science and technology studies, and is the focus of the next part of this chapter.

2.3.3 Federative strategies

The mutual translation of social worlds' interests is not something that can occur spontaneously, but instead can only be achieved by the sustained rhetorical and social work of many actors. Social worlds theorists studying the sciences have outlined a range of strategies employed by actors to facilitate these processes. Collectively these can be described as 'federative strategies'[17] and include particular research methods and theories, as well as looser conceptual and linguistic tools. Through various means,

federative strategies help to foster communication and co-operation between diverse social worlds. By adopting a common research practice or methodology, scientists from very different fields can find that their work can be more easily compared and made coherent with each other, which can in turn foster further co-operation and the translation of interests. In a similar manner, an innovative research tool can lend itself to solving diverse problems, which again leads to the people trying to solve those problems working more closely together.

For example, in Star and Griessemer's museum, standardised routines for the collection of animal specimens were the means by which scientists could obtain the coherent information they needed, amateur naturalists could contribute to nature conservation in California, and trappers could be paid for animals caught that normally could not be used for fur or food. Fujimara (1992) discusses the role of standardised molecular biology research techniques in fostering the spread of molecular biology cancer research among clinicians, medical researchers and 'basic' biological researchers. She also describes how the oncogene theory of cancer, by helping to solve problems in these different areas, contributed to the spread of molecular biology cancer research.

The other major method by which social worlds mutually translate their interests is through the use of 'boundary objects' (Star, 1989; Star and Griessemer, 1989; Löwy, 1992). These are concepts, ideas or 'things', which facilitate communication across the boundaries of social worlds:

> objects which are plastic enough to adapt to local needs and the constraints of the several parties employing them, yet concrete enough to maintain a common identity across sites. (Star and Griessemer, 1989, p393)

As discussed earlier, a social world is partly defined by the discourse and ideology that its members hold in common, so problems are likely to occur when attempts are made at co-operation (and therefore communication) with members of other social worlds. This can be seen very acutely in science, where often impenetrable technical language characterises most, if not all scientific disciplines. In her history of immunology in the 20th century, Ilana Löwy (1992) observes that terms such as 'receptors' and 'histocompatibility' have different meanings to clinicians and biologists, and yet this

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[17] Adapted from Löwy (1992)

does not lead to misunderstandings, but in fact helps link together medical and scientific tasks concerned with immunology. She argues that the central boundary concept of the immunological 'self' facilitated such interaction and contributed to the strengthening and extension of immunology as a subject after the Second World War. Boundary objects can also aid in interactions between scientific and non-scientific worlds, as in the natural history museum, where 'the state of California' played a central rhetorical role in gaining support for the museum, yet meant different things to the scientific, administrative and lay worlds concerned (Star and Griessemer, 1986).

However, in the sciences the aim is not only to achieve co-operation across social worlds, but also consensus, through agreement over the 'facts' of the science in question. These two aims pull in opposite directions, and create tensions that can be very difficult to negotiate successfully. In her case study of cancer research, Fujimara (1996) argues that this was achieved by the use of a 'standardised package' comprised of the oncogene theory of cancer, standardised molecular biology techniques, and a number of looser boundary objects such as 'cancer', 'genes', 'tumours' and 'evolution'. The package successfully negotiated the tensions between divergent social worlds and the need for fact stabilisation, by combining a flexible theory with standard methods. This allowed for the comparison and so coherence of research data, aiding the co-operation of the diverse social worlds involved.

These case studies suggest that although some kind of package of boundary objects, theory and method is always involved, the particular combination of these is unique in each case. In contrast to Fujimara's example, Star and Griessemer (1989) and Löwy (1992) emphasise most strongly the roles of boundary objects and methods, while theories play a less important role. Social worlds/interactionist approaches have also been used in medical sociology (Berg, 1997; Berg and Mol, 1998), and from within this tradition, Baszanger (1998) looks at the diverse social worlds in operation in specialist clinics for the treatment of pain. In such clinics, patients are treated by a diverse range of physicians, such as anaesthetists, neurosurgeons, neurologists and psychiatrists. Baszanger found that a single strong theory, the 'gate control' theory of pain, combined with the freedom for each specialist to continue with their own methods of treatment, facilitated their co-operation in the wider work of pain medicine. Comparison of these

case studies suggests that perhaps the combination of federative strategies in use in any given case may depend, at least in part, on what the ultimate aims of the 'work' in question are. If the aim is co-operation in *practice*, then the flexibility of boundary objects is most needed, while the coherence of knowledge needed for a scientific consensus can be best brought about by the use of standardised methods.

2.4 USING SOCIAL WORLDS THEORY IN NEW WAYS

In this chapter, I started by fully reviewing the literature on 'science in public' – research on popular science, science and the media and the public understanding of science. This broad area of concern has only started to be systematically investigated by social researchers in the past fifteen years or so, but already major changes in the way we think about these issues have occurred. In particular, traditional, 'canonical' and science centred accounts of why there are problems in relations between scientists, the media and publics have been re-evaluated and strongly criticised. Newer approaches are attempting to bring about more balanced accounts of these issues and formulate new models to help guide our understandings of relations between the sciences and the rest of society. Secondly, I have introduced to the reader an approach to social research, based within the tradition of symbolic interactionism, known as social worlds theory (SWT). I have then reviewed the small but growing body of research in science and technology studies, that has utilised and further developed this approach into a pragmatic, yet flexible and sophisticated way of analysing science and technology in our society.

Having done this, I would now like to move on to the central argument of this chapter. I believe that taking a social worlds approach to the analysis of case studies of science in public could prove to be extremely productive. As I have discussed above, this area of research is currently changing its approach quite radically and is facing some problems in moving on from critiques of the canonical account. In this section, I will outline the ways in which using SWT may be of a great deal of help in doing research in this area, particularly in case studies where many strong and diverse social worlds are involved. Furthermore, I think that the concept of social worlds may be extremely

helpful in formulating a new kind of model of relations between the sciences, the media and publics. I will illustrate this diagrammatically with a hypothetical model of relations between several scientific, media and public social worlds. However, like any research approach, SWT does have its limitations, and I will discuss these in terms of the likely problems of application to science in public research.

2.4.1 Social worlds of science in public?

The theoretical approach known as social worlds theory (SWT) has been in use in the sociology of science and technology for some years now, and has proved to be of particular help when looking at interdisciplinary science and the development of new areas of research. I would argue that social worlds theory has great potential for application to researching science in public issues. A social worlds focus could help in moving beyond the traditional distinctions between 'science', 'media' and 'public' to look instead at the interactions occurring between the *sciences*, *forms* of media, and *publics* concerned with a particular issue. As discussed earlier, the major sources of misunderstanding and conflict between scientists, media workers and 'lay' audiences are the huge differences between them in terms of modes of practice, values and interests. In particular, this can be seen in contrasts between the working practices and attitudes of scientists and journalists that have been pointed out by many authors, some of which are listed here (Gregory and Miller, 1998; Hansen, 1994).

Journalists	***Scientists***
Commercial (largely)	Public Sector (largely)
Time restricted – very fast moving	Slow process from ideas – publication
Space for information restricted	Space for information provided
Priority to gain attention of audiences	Priority to make solid arguments to peers
Clarity, unambiguity of stories	Partial nature of knowledge; importance of evidence, methodology etc.
Concerned with all areas of social/political	Concerned only with science; other

life	social/political concerns less important
Reliance on 'expert' knowledge about the sciences	Critical attitude to scientific knowledge claims
Impartiality of reporting	Evaluation of claims according to their position within scientific networks.
Rigid divisions of labour – shapes the working relationship with scientists	Flexible, informal divisions of labour – relationship with media up to individual
Value of 'credibility' of coverage/sources	Strong value of 'truth' of knowledge

This fits extraordinarily well with the definitions of social worlds given by Strauss, Clarke and others, as social groups with shared aims of 'work' who organise around this work, creating values and sharing resources to allow them to continue it. The social worlds of scientific, media and public groups are very different things, with very different values and modes of action. In addition to the crucial distinctions *between* these areas, as described earlier, there is a great deal of important heterogeneity *within* them, an issue which many studies of science in public have struggled to get to grips with (Michael, 2002). The social worlds perspective can easily engage with this problem, by recognising that social worlds exist on many scales, are dynamic and flexible and that social actors often have multiple and contradictory memberships. The focus in much of the work on scientific social worlds, on mechanisms of language, discourse and communication between diverse groups, is one that lends itself easily to some of the inherent questions of research in the area of science and society. How and why do diverse scientific and non-scientific groups communicate and co-operate? How and why do such groups understand or not understand one another? How is the factual status of science, as well as its public legitimacy, achieved in the public domain? All of these issues can start to become clearer once the interests, practices and shared languages of the social worlds concerned are examined in turn on an equal footing.

Continuing with the theme of communication, it might be helpful to pause for a moment to consider some of the terminology in use in this area. Often, when discussing the movement of knowledge between scientific and popular forms, canonical accounts often refer to the literal 'translation' of technical scientific language into a

simplified version necessary in order for the public to 'understand' it. As discussed earlier, this kind of simplistic, information-processing understanding of science communication is symptomatic of the kind of scientistic approaches to the problem that have proved to be so problematic. At the same time, actor/network and social worlds analyses often refer to the 'translation' of actors' and worlds' interests, referring to the social processes involved in achieving co-operation. During episodes of science in public, the two may well occur at the same time, and it is important to understand that they are not the same and to avoid confusion between them. When discussing the linguistic processes of change between scientific and popular contexts, it might be more appropriate to avoid the term 'translation' altogether.

> Preferable to the watery analogy [of popularisation], or even to similar metaphors of contamination, contagion, seduction or colonisation, might be those of grafting, appropriation and transformation (Cooter and Pumphrey, 1994, p249)

Therefore, perhaps this suggestion could be taken up and for the purposes of this thesis, I intend to do this by sticking to discussions of the 'transformation' of knowledge and the 'translation' of interests, in order to avoid any confusion between the two terms.

In addition to handling the problems of why scientific, media and public groups disagree with each other and amongst themselves, a social worlds approach will also have a strong balancing effect on analyses of science in public. Social worlds theory's emphasis on processes of *mutual* translation, between multiple social worlds, means that the interests of media and public groups should be automatically seen as equally important as those of scientific groups. The traditional tendency of canonical approaches to work from the point of view of the sciences is one often shared by actor/network and other constructivist SSK approaches to the problem. Their natural focus on the construction of knowledge within science seems to predispose such approaches against looking at the construction of knowledge in the rest of society (Wynne, 1995).

This problem of emphasis is most starkly illustrated by re-examining Garrety's (1997) study of the cholesterol controversy discussed earlier. This paper sought to directly compare the merits of actor/network and social worlds theories, and Garrety reaches the conclusion that for her case study, social worlds theory is far more useful. In the

description of the case study, Garrety describes the social worlds of scientists, medics, policymakers and the food industry in the mid-20th century USA. However, despite the fact that the majority of the archive material used comes from popular science and media coverage, journalists and the media are only really mentioned in passing, and the relevant media social worlds are *not* analysed at any length, or indeed at all. This oversight is, I feel, profound, and reflects the still considerable distance between the mainstream of science and technology studies and much of the research being carried out on science in public.

In addition to the benefits of social worlds theory for the practice of research and analysis of science in public, I believe that SWT can also help in the work of formulating new models of relations between the sciences, the media and publics. Such models could be prepared visually in a similar manner to those created in actor/network analyses of science and technology. In such models, at times the 'actors' depicted are individual people, at other times they can be large organisations or institutions, as in Neresini's (2000) model, where one of the actors depicted is 'the Catholic Church'. In a similar manner, I would intend that the social worlds depicted could be on a large or small scale, according to the case in question. To this end, Figure 3 represents part of a hypothetical network of social worlds from the point of view of one scientific world, S_1.[18] From here, it can be shown how different forms of media, let's say television (M_1) and newspapers (M_3), have different relationships to this world. World S_2M_2 could represent scientists in the area who also write popular books and articles, and therefore belong to both scientific and media arenas. Scientists are also audiences for the media, and so a scientific world peripheral to S_1 can also be a 'public' or even a 'lay' world as far as it is concerned, as shown by S_4P_3. The diagram also shows how media worlds, in their usual role as mediators, sit mostly, but not always between sciences and publics, and are more richly interconnected than either sciences or publics are. If drawn from the point of view of any of the other social worlds then the diagram would look slightly but not radically different. Using such an approach, a situation where media worlds are

[18] Again, this diagram has also been adapted with many thanks from Irene Rafanell's current theoretical work (Rafanell, 2002).

acting as intermediaries between scientific ones[19] could easily be represented, as could one where a 'public' group such as a patient support group is playing a central role.

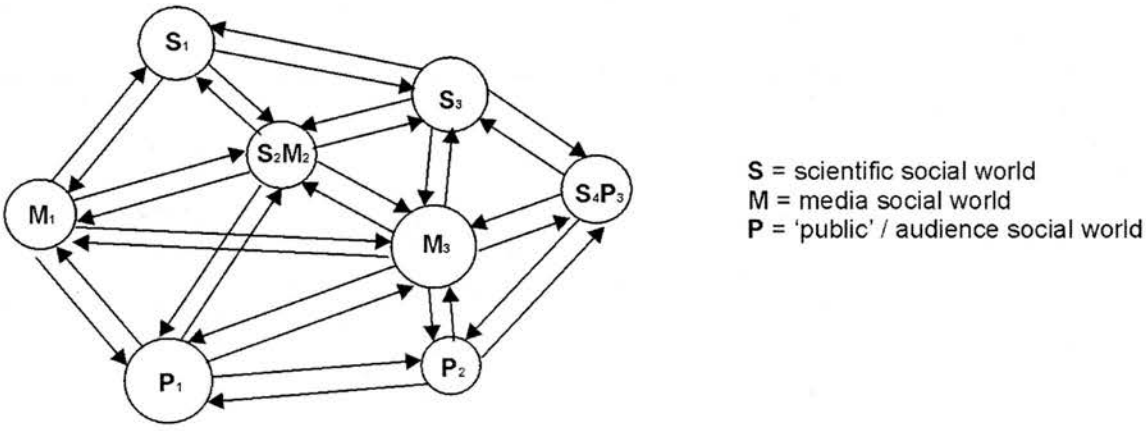

Fig. 3: Hypothetical 'social worlds' model of interactions and knowledge flow between a number of sciences, media forms and publics.

Compared to earlier models of science in public, discussed earlier in the chapter (the canonical model; Bucchi, 1998 and Lewenstein, 1995a), this 'social worlds' model has dealt with many of the problems they encounter. In particular, it has entirely dispensed with the idea that sciences, media and public are separate entities running along a continuum. At the same time, it can reflect the wider structure of these interrelationships and is simple enough that it has analytical power. On the other hand, it is harder to see how the model could represent either the certainty of knowledge, or the concepts and issues under discussion in a case. Perhaps it is best seen as a model of social groups (including different media forms), their interactions and the paths of knowledge flow. It may be that the issues of concern when studying science in public are so very complicated that no one model can hope to represent them. Perhaps we can best proceed by formulating different models according to the focus of each piece of research, whether it is knowledge, forms of communication, social groups or discourse.

Although it is easy to see how a social worlds approach can be of great help when researching issues of interaction between scientists and the media and of modelling science in public, it may become more problematic when looking at interactions

[19] As described in Lewenstein's (1995b) case study of the cold fusion controversy.

between publics and science.[20] In some cases, such as when studying patient support groups, environmental campaigners, or Cumbrian sheep farmers, the social worlds analysis can be very useful, and indeed social worlds theory was first developed in studying local communities, social movements, workplaces and the like. However, these kinds of groups are very socially cohesive, are often well organised and have pretty clear values and aims. When studying publics, what happens when we move from these kinds of very specific public groups to the wider sense of public as in 'the public domain' or 'public sphere' (Habermas, 1992)? To start with, it may be helpful to recognise the differences between doing research on actual publics and the analysis of the rhetorical power of 'the public', as in 'science in public'. Simply because such research does not address who the publics for science actually are does not mean that it is invalid. However, how can we get to grips with those publics for science that are *not* coherent, organised and may lack power in society? In such a case, as social researchers how can we even *see* them? More differentiated and subtle forms of survey research may help in finding an answer for this by collecting more complex data on the publics for science, breaking it down along socio-economic lines. However, as was discussed earlier, such approaches are quite limited in their ability to get at complex and often contradictory data like this. Certainly, more concentrated research attention on this issue from all approaches would be of help, but it may that our ability to investigate such issues comprehensively may be quite limited.

Social worlds theory at least seeks to directly address these problems by overtly paying attention to less powerful and 'implicated actors' (Clarke, 1998), and this may go some way towards addressing these problems. The concept of implicated actors was developed in order to address the issue of those actors who are or were, 'present in an arena, but silenced, not present but targeted, or otherwise involved, either at the moment or downstream' (Clarke, 1998, p272). In the case of the reproductive sciences, the implicated actors were largely women, as the 'targeted consumers of technoscientific research' (Clarke, 1998; 272). This notion fits very well with work done in technology studies and feminist technology studies on the concept of 'user scripts': the differences in ways in which technology is designed to be used, and ways in which it is actually used by people (Akrich, 1992; Cockburn and Ormrod, 1993). The demonstrated differences

[20] Thanks to Ulrike Felt and Brian Wynne for helpful comments on this issue.

between these two, found in many case studies, exposes the assumptions made by designers about the social position, agency and other properties of the users of technology.

It seems that there are strong parallels between the implicated actors and user scripts of technology studies, and the roles that 'the public' or 'audiences' often play in many discussions of science in public, in both canonical and interactionist discussions of the issues. This occurs not least within the working practices of the media themselves, where knowledge of audiences and their preferences largely comes through commercial success and tacit professional knowledge, rather than by more direct 'market research' methods.[21] Therefore, another possible way of addressing this issue might be investigate the implicated actors in case studies of science in public, the *projected social worlds* that the actors think they are talking to. What kinds of people do the major active actors think they are talking to, and what kinds of preferences, opinions, and beliefs do actors think they hold? Such an approach, while not directly addressing the issue of the less visible and powerful publics for science, can at least help to clarify the meanings that publics and audiences may hold for actors when dealing with science in public.

2.4.2 Social worlds and evolutionary psychology

Before ending this chapter, I would like to briefly discuss the case study of 'science in public' which is the topic of this PhD thesis – popular evolutionary psychology in Britain of the 1990s. I came to this research topic before I discovered social worlds theory, and it is largely the particular and unusual properties of the evolutionary psychology debate that have led to my adoption of the theoretical model outlined in this chapter. As I briefly described in the Introduction, public controversy over the subject of evolutionary psychology (EP) unfolded in the UK mass media during the late 1990s. My research has aimed to document this controversy, and explore the factors involved in making it into a public controversy played out in the mass media, rather than being settled in the relatively closed world of academic journals and conferences, as scientific controversies usually are. In this chapter I have attempted to outline a new theoretical

[21] Again, this point is one that was made repeatedly by my interviewees working within the media; see also Hansen (1994).

approach, which I think will be of help in my own research on evolutionary psychology in the UK media. A social worlds perspective, building upon prior research on science in public, could help to overcome some of the problems that this area has had in moving away from traditional, 'canonical' models of relations between the sciences, the media and publics. I have argued that social worlds theory (SWT) can be of wide utility in this area, and will now illustrate its potential by sketching out how the case of popular evolutionary psychology is particularly suitable for a social worlds analysis.

Evolutionary psychology is a fundamentally interdisciplinary area of research, concerning not just psychology and biology, but also, for example, anthropology, philosophy, sociology and neuroscience. All of these disciplines are, of course, made up of many smaller sub-disciplines, some of which are more concerned with evolutionary psychology than others. In addition, evolutionary psychology is hailed by its proponents as a new field, or even a new paradigm, but strong links with the pre-existing disciplines of sociobiology, cognitive psychology and behavioural genetics raise questions about whether this is really so. In any case, such claims are certainly suggestive of an attempt to change the disciplinary structure in this area. As previously discussed, most social worlds analyses of science have looked at disciplinary change and development in some form, and so this pre-existing theoretical framework can be mobilised for studying the EP case. The focus on how differing values, aims and practices affect the attitudes of members of a social world towards a particular issue will be of great help in understanding how and why actors from these many disciplines approach EP in the ways that they do. In addition, social worlds theory's concern with processes of interaction between social worlds, particularly legitimation and claims making activities, will also be of great help in analysing the rhetoric used in these debates over evolutionary psychology.

In addition, the links made by many authors between such legitimation activities and the mobilisation and defence of disciplinary and other boundaries in the sciences are particularly useful here (Gieryn, 1983; Star and Griessemer, 1989). A social worlds perspective would expect to find such activities to be particularly prevalent when the balance between social worlds is in flux, and the public domain provides a powerful arena in which to make a claim. In the light of this observation, it is not all that

surprising that evolutionary psychologists and their opponents have turned to the public to make their arguments. Such an idea is also entirely in agreement with the ideas of Massimiano Bucchi (1998) and others on the links between scientific disciplines, the public domain and boundary work. The fact that controversy over EP has not been restricted to 'traditional' scientific sites, but was (and is still) also being played out in the UK mass media means that the field of potential actors has widened considerably. This includes many kinds of media professionals, as well as those from the many academic disciplines involved with evolutionary psychology. This is underlined by the observation that these media professionals did not only pass on arguments made by academics, but also actively contributed to the debates themselves.

This changes the study from one of a scientific controversy alone to one also about popular science, public controversy, and science in the media at the very least. This extreme diversity of actors must be taken into account, and the social worlds perspective does so quite easily. As I have argued in this chapter, a social worlds perspective on 'science in public' case studies such as this could be very productive. It can take account of this diversity and heterogeneity between as well as within the scientific and media worlds involved. It can also help to keep in sight the interests of media actors in publishing and airing evolutionary psychology, as well as of academic actors in advancing their arguments in the public domain. It would take as a start point the agency of both scientists and media professionals, and would help answering questions of why EP has appeared in the UK media in the ways that it has. I have decided that the issue of the 'publics' of the evolutionary psychology debate is one that cannot be directly addressed within the limitations of this PhD thesis. However, I intend to take up the suggestions about projected social worlds outlined in the previous section, looking at who the participants in the EP debate think they are talking to, and why.

In arguments over evolutionary psychology (both academic and popular), it is possible to see interdisciplinary networks of alliance *on both sides* of the debate. However, these networks cannot be characterised as falling along any kind of simple fault line such as biology vs. social sciences, left vs. right wing, or masculine vs. feminine, or even feminist science. By looking at each of the scientific and media social

worlds concerned with evolutionary psychology in turn, it should be possible to start disentangling this complex web. The ways in which and the reasons why these academics, journalists, editors and publishers are co-operating as they do can be explored in turn. On the whole, the social worlds approach should help me in exposing the more complex and ambivalent debate that exists behind the simple 'for and against' characterisation of evolutionary psychology and sociobiology debates that is often deployed.

Even the most cursory glance at media coverage of evolutionary psychology will tell you that some wider concerns of our society are very important in shaping this popular debate, and perhaps in creating it in the first place. Many evolutionary psychology stories seem to relate to gender politics in some form or other: sexuality in particular, but also issues such as the glass ceiling, relationships, masculinity and changes in family structure also provide convenient 'hooks' on which to hang an evolutionary psychology story.[22] Another important issue is the rising prominence of biology (and biotechnology) in society: many evolutionary psychology stories will either headline with or mention genetics and other biological causes of behaviour, often as if they are synonymous with evolutionary causes. Again, a social worlds perspective works to take into account such broad issues, particularly as seen in Adele Clarke's (1998) work, where changing social attitudes to sexuality and reproduction were important in changing reproductive science from an 'illegitimate' to a legitimate science. Furthermore, this socio-political relevance, as well as underlying arguments in evolutionary psychology over genetic vs. environmental causes to human behaviour identifies this episode as a part of the longstanding nature-nurture controversy. This debate has been ongoing since the turn of the 19th century, in the form of controversies such as those that took place over eugenics, links between race and I.Q, behavioural genetics and sociobiology. The case of evolutionary psychology fits well with Karin Gerrety's (1997) description of a scientific debate that takes place over long periods of time, in which the 'facts' remain elusive and highly contested. According to Garrety's arguments, this property would also make evolutionary psychology particularly suitable for a social worlds analysis, where the more flexible framework provided can cope with a messy and complex controversy such as this, which is unlikely to reach closure anytime soon.

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[22] These linkages will be discussed at much greater length in Chapter Five.

In this chapter, I have reviewed the literature on research on 'science in public' – popular science, science and the media, and the public understanding of science. In recent years, this area has undergone a process of critique and reassessment, with new methodologies and theoretical models being brought into the field on an ongoing basis, which is still beset with problems. I have therefore argued a case for the potential utility of a research approach based in social worlds theory for doing research on popular science, science communication and the public understanding of science. I have then shown how social worlds can provide a useful framework for modelling the knowledge relations between scientific, media and public groups. Finally I have sketched out some of my thoughts on why a social worlds analysis might be particularly suitable for researching my own case study of popular debate in the UK media over the 'new field' of evolutionary psychology. Through the rest of this thesis, I plan to demonstrate that this is indeed the case by putting these theoretical arguments into practice. I am aiming to identify the major actors and social worlds in play in this public debate, drawing out the interactions between them (co-operative and agonistic) and their values, interest and modes of practice. Through my analyses of the media coverage of EP and interviews with participants in the debate, I will also attempt to make out the kinds of boundary objects and other federative strategies that the many social worlds of popular EP are using to help them co-operate to achieve their goals.

Chapter III:

Research Design and Methodology

3.1 INTRODUCTION

3.2 PILOT STUDY: MSc BY RESEARCH

3.2.1 Findings of the pilot study

3.3 RESEARCH AIMS AND QUESTIONS

3.3.1 Aims of the project

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3.7.4 Qualitative analysis of media material

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Chapter III:

Research Design and Methodology

3.1 INTRODUCTION

Researching popular evolutionary psychology has presented me with some significant and interesting methodological challenges. Faced with a combination of issues that had not been studied together, or in some cases at all before, including a 'live' scientific controversy, taking place in the public domain of the media, as well as evolutionary psychology itself, I had to decide upon a strategy that could cope with all these demands. It seemed to me that the best way to proceed would be to try to obtain an overall picture of this controversy, carrying out the research as a case study using multiple methodologies. In this chapter, I will describe this strategy in detail, including the pilot study, its findings and my responses to it. I will then lay out the main aims, objectives and research questions of the thesis, alongside my research design. Finally, I will describe in detail the methods of data collection and analysis I have used and will end with a brief discussion of some of the problems I encountered when putting into practice this design.

3.2 PILOT STUDY: MSc BY RESEARCH

Evolutionary psychology first came to my attention during 1998, while I was doing my MSc in Science Studies at Edinburgh University. As I have already described, I wanted to find out why 'the new science of evolutionary psychology' that was being discussed in the media during 1998 had never been mentioned during my undergraduate studies in the area the previous year. This seemed to be an interesting premise for a research project: to look at the media coverage of this area of science and to try to find out why a new disciplinary label was coming into use in the public domain, apparently without a corresponding usage in academia. Because this would be quite a big research topic, I decided to carry out some exploratory research for my MSc dissertation. This research was designed as a pilot study for the PhD thesis, a data gathering exercise in

which I documented the UK broadsheet newspaper coverage of evolutionary psychology between 1994 and 1999.[1] This coverage was analysed both quantitatively, looking at the number and timing of articles discussing evolutionary psychology, and qualitatively, looking at the main themes addressed by people writing about the subject. These two approaches to the UK media coverage were then followed by in-depth interviews with three actors in popular evolutionary psychology: two academics engaged in popular discussions of the subject, and a specialist science producer for UK national radio (Cassidy, 1999).

3.2.1 Findings of the pilot study

My findings were extensive and quite complex, but some key issues can be picked out as relevant for this discussion. Broadsheet coverage of evolutionary psychology appeared relatively soon after the earliest academic papers on the subject were published, in 1994, with the entire time span under study being only ten years.[2] Peaks in evolutionary psychology coverage occurred at the same time as popular science books on the subject were published. There were two other tentative conclusions about this newspaper coverage, although neither was based on systematic data, but on generalised impressions reached while working with the material. It appeared that academics or authors of current popular science books wrote a significant proportion of press articles on the subject, and that these academics were engaged in a high profile controversy over EP in the media. At the same time, the majority of the media coverage was not located in more routine sites for science reporting such as news and science sections, but instead seemed to be mostly in lifestyle or weekend newspaper supplements. Many of these reports included large amounts of 'lay' opinion about the claims made by evolutionary psychologists, mostly coming from journalists. It also seemed that, unlike most media coverage of science, where research findings of interest are reported, much of the coverage of evolutionary psychology focused on the controversy itself, or on the ideas of one of the participants, especially if they were publishing a book at the time.

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[1] By means of CD-ROM archives of these newspapers – for full details see section 3.6.1

[2] The first academic articles using the phrase 'evolutionary psychology' were a pair of papers by Cosmides and Tooby (1989a; 1989b), and for the MSc research I looked at media coverage up until 1999.

In my qualitative analysis, I found three main themes in discussion of evolutionary psychology in the press. Issues of sexuality and gender politics came up most strongly, which in some ways was unsurprising considering that these are the subject matter of a great deal of evolutionary psychology research. However, press discussions of EP tended to relate it to many of the intricacies and issues of gender politics at the time, such as the so-called 'crisis in masculinity', different forms of feminism promoting sexual equality or difference, and the Clinton-Lewinsky scandal during 1998. Concerns over so-called biological determinism and the increasing influences of science, particularly biology in people's lives comprised a second area of discussion. These concerns were often also related to ongoing debates over the role of biology in human behaviour, which date back to and far beyond the Sociobiology controversy of the 1970s and '80s (Segerstrale, 2000). The third main issue I found discussed in relation to evolutionary psychology was a little more obscure: links between public controversies over evolutionary psychology and other academic conflicts, known collectively as the 'science wars'. In general, many of these boiled down to arguments about the privileged role that scientific knowledge and institutions play in our society. Traditionally, scientists have argued that this position is justified because science offers the only route to reliable, objective knowledge uninfluenced by personal opinion or political bias. However, in recent years many social researchers have been strongly challenging these ideas through the results of their study of how science actually works. This research, combined with wider moves towards interpretive social science and the popularity of postmodernist philosophies, eventually led to a 'backlash' from the scientific establishment, which sought to reassert its place in society (Gross & Levitt, 1994). I found many links between Darwinian proponents of evolutionary psychology and proponents of the traditional view of science in society, with participants such as Richard Dawkins actively engaged in both areas of controversy.

3.3 RESEARCH AIMS AND QUESTIONS

3.3.1 Aims of the project

This thesis has aimed to investigate evolutionary psychology in the UK mass media, as a case study of popular science, and of public controversy over scientific claims. It has concentrated on popular discussions of the subject in media such as newspapers, magazines and books. Basic features of academic discussion of EP (such as the frequencies and timescale of discussion) were addressed in order to gain a picture of relationships between academic and media discussion. However, a full investigation of academic controversies over evolutionary psychology would be well beyond the remit of this study, and so this line of investigation was not followed in great depth. The case study informs several major concerns in current research in science and technology studies (STS): what happens to 'science in public'; how the boundaries of science are built and maintained; the construction of expertise in different kinds of knowledge, and the social contexts and content of scientific knowledge. Each of these broad areas of concern gives rise to a set of research questions, detailed at length later in the chapter.

A focus on the unusual aspects of popular evolutionary psychology especially furthers current understandings of expertise, popular science, science communication and the 'public understanding' of science. Despite (or perhaps because of?) its unusual features, communication of evolutionary psychology is very successful in terms of the levels of exposure and attention given to this relatively new science. Finding out what it is about evolutionary psychology that attracts media and public attention may help in the wider project of understanding the problems faced in communicating science with wider audiences. The initial findings from the pilot project suggested that part of this appeal is due to the subject matter of evolutionary psychology - it talks about human life, sexuality, gender and relationships, which are topics all people have some understanding of simply through their lived experiences. As well as providing insights into the communication and public understanding of this kind of knowledge, investigation of how academic and media professionals relate to EP throws light on the construction of expertise in such areas.

In a similar manner, further investigation of whether academics' popular activities in relation to evolutionary psychology are unusual helps to shed light on questions of relationships between the sciences and the public domain. If evolutionary psychology academics are indeed speaking and writing 'directly' in the media more than is usual for scientists, this would be suggestive of some kind of push towards the public domain. As I discussed in Chapter Two, studies of popular science and science communication have suggested links between such moves and the establishment or movement of the boundaries drawn around disciplines and around science itself. Evolutionary psychology stands on the borders of many disciplines, and is itself often discussed as a 'new science' or a new paradigm for psychology or the social sciences. At the same time, opponents of EP often portray it as part of a politically dubious continuum of sciences linking evolution and humans, from sociobiology, through behavioural genetics, right back to Social Darwinism and eugenics earlier in the 20th century. Furthermore, because of its visibility in the popular domain and its very human subject matter, evolutionary psychology also sits on the borderlines drawn between science and the rest of society. For these reasons, this research also aims to investigate the ways in which the boundaries of science are constructed in and around the evolutionary psychology case and how this construction is related to the public nature of the controversy.

Finally, in light of the MSc findings about how discussions of evolutionary psychology in the press were related to social and political issues of concern of the time, the research also aims to extend this line of investigation. Such discussions included the evolutionary origins of sexuality and the gendered roles of men and women in our society, biological determinism and the possibility of wider social change, and changes in political cultures in the 1990s. These are analysed in greater detail, not only in the press but also other media forms such as books, radio and television and the Internet. As well as analysing media output in this area, it is important to find out what the people inputting to this discussion think and whether they feel the same issues are important to them. Therefore, the relationships between evolutionary psychology, media coverage and issues of the social and political context of 1990s Britain are also addressed in this study.

3.3.2 Objectives and research questions

When these research aims were brought together with the findings of the pilot study and the theoretical framework developed in the previous chapter, a series of research questions started to emerge. The overarching 'research question' of the project would be something like this: why did evolutionary psychology appear so prominently in the media at this time and place, and why were the claims it made the subject of such public controversy between so many kinds of people? This larger question gives rise to a number of more specific questions, which I have grouped together under the heading of six broader research objectives, each concerned with a particular theme for investigation in the thesis.

i) *To map out the outlines of popular evolutionary psychology in the UK*

- How much, when, where and how was evolutionary psychology discussed in the UK mass media? What are the timeframes, locations and authorship of popular EP stories?
- What are the relationships between popular evolutionary psychology and discussions of the subject in academia?

ii) *To analyse evolutionary psychology as 'public science'*

- In what ways are academics in the area interacting with the media? Is there evidence that they are communicating 'directly' to audiences any more or less than would generally be expected?
- Why do these academics communicate in the public domain?
- What do these findings mean for current debates over models of science in public?

iii) *To analyse popular evolutionary psychology as science about people*

- Why do the media cover evolutionary psychology? What are the 'pull' factors that bring the subject into the public domain?
- How is evolutionary psychology covered by the mass media? How do the patterns of coverage compare to those of other academic subjects?

- What kinds of people 'speak' and comment about evolutionary psychology in the media?
- What do these findings mean for constructions of expertise in the natural and social sciences?

iv) *To analyse the wider contexts of popular debates about evolutionary psychology*

- What are the specific social and political issues that people writing in the media relate to evolutionary psychology claims?
- How do actors relate evolutionary psychology to other sciences linking evolution with human behaviour (e.g. sociobiology, behavioural genetics, Social Darwinism, eugenics)?

v) *To map out the social worlds of popular evolutionary psychology*

- What are the major social worlds involved with popular evolutionary psychology?
- What are the attitudes, modes of practice, interests and interactions of these social worlds? How do they co-operate, or come into conflict with one another?
- What kinds of boundary objects do the actors in these worlds use to facilitate their communication and the mutual translation of interests?

vi) *To analyse the boundaries and rhetoric of evolutionary psychology debates*

- Evolutionary psychology stands on many of the boundaries constructed around the sciences: between different disciplines; natural and social sciences; science and politics; science and non-science; science and popular science; and science and the public. How do actors involved with EP negotiate these concerns through boundary work? Which areas are reinforced, which are dissolved, and by whom?
- What kinds of rhetorical strategies are used with respect to these issues, and in actors' interactions with members of their own and other social worlds?

3.4 RESEARCH DESIGN

After carrying out the pilot study, I decided that the research strategy I had used was basically successful for providing a preliminary investigation of the subject at hand. Quantitative data on evolutionary psychology coverage showed me that it was appearing in the media at sufficient levels to be worth researching, while at the same time, my qualitative analysis of media coverage and interviews gave me a much greater insight into why and how it was happening. This strategy allowed me to gain a broad perspective on the situation, while simultaneously being able to pursue some of the more complex issues in depth. However, for it to be adequate for PhD research, it needed to be pursued in a more comprehensive way, making sure I collected material from a wider range of sources, and in a more co-ordinated manner. It seemed even more important to look in depth at what people were writing about EP and their motivations for doing so, but also at where, who was writing, and more precisely how much popular EP there was in the UK media. Therefore, I decided to continue with this generalised strategy, elaborating and improving on each of the methodologies used, to provide a systematic case study (Stake, 1994) of popular evolutionary psychology in the 1990s UK.

Although my initial instincts and decision to pursue a mix of quantitative and qualitative methods has probably come out of a career trajectory moving from the natural to the social sciences, the usage of 'mixed methodology' research designs is now on the increase in social science research (Brewer and Hunter, 1989; Cresswell, 2003). As is documented in part during this thesis, controversy over how best to carry out research on people has been a prominent feature of academia for most of the 20th century and indeed into the 21st. This argument can be broadly characterised as one between a positivist paradigm, which believes that humans can be studied as part of objective reality and generally uses quantitative methods to do so; and an interpretive paradigm, which believes that humans cannot be studied in this way due to the importance of human subjectivity, and uses qualitative methods in its research.[3] The use of the term 'paradigm' implies that these two approaches are mutually exclusive, and

[3] This is, of course a very broad characterisation, and in no way implies that positivist researchers never use qualitative methods, or vice versa.

this is certainly the assumption made by most participants in these debates. However, Tashakkori and Teddlie (1998) describe a newer and subtler paradigm in social research, the pragmatic paradigm, which seeks to move past this impasse and into new territory. This concerns itself less with questions of epistemology and more with 'what works', regarding quantitative and qualitative methodologies as complementary rather than mutually exclusive.

For my own research, where questions of 'what' and 'how much' are of equal importance to those of 'why' and 'how', this pragmatic approach would seem to be the most suitable, as well as appealing to me on a more personal, aesthetic level. In the research area of studies on 'science in public' the overall picture has been one of movement from positivist, quantitative studies (large scale surveys of public opinion and content analyses of media accuracy) towards interpretive, qualitative ones (ethnographic or interview studies of publics, and rhetorical/discourse analyses of media coverage). At the same time, there have been several calls for better integration of the two approaches in research on science in public (Bauer, 2000; Evans and Hornig Priest, 1995), but from the literature it seems apparent that few scholars have so far taken up this challenge. For many researchers, mixed methodology research offers a number of advantages, principally based around the concept of *triangulation* (Denzin, 1978). Different research methods are best suited to answering different kinds of research questions, but often in the past this is ignored or underplayed by researchers in each paradigm, whereas several methods used together in the right combination can help to compensate for each other's shortcomings. In addition, the use of several methodologies can greatly increase the overall validity of a piece of research. As described by Brewer and Hunter (1989, p17 – 20), if different methodologies come up with convergent (or similar) findings, it can be inferred that they are a more accurate reflection of what is actually happening. On the other hand, if different methodologies come up with strongly divergent findings, this can point towards methodological errors, which can then be revised and improved.

There are many ways to do mixed methodology research, the most basic of which being an exploratory qualitative study followed up with a major quantitative piece of research or vice versa. However, a more thorough mixing is also possible, utilising both approaches at theoretical, research design, data collection and analysis stages of the

research. It is this more integrated strategy, described by Tashekkori and Teddlie (1998, p52-58) as a 'mixed model' study, which is being employed here. Throughout my research, I have worked in an iterative manner, moving from my observations of popular evolutionary psychology, to research literature and theory, to empirical research and back again. This has meant that throughout the time I have been working with popular EP, I have used empirical findings from one research method or stage to inform the questions asked and design of the next. This is particularly apparent in my use of findings from the pilot study in the research design for the PhD, but it has also occurred throughout the rest of the research process. For example, my quantitative findings heavily shaped the interview schedule I developed, which was also adapted and changed as I proceeded with the interviews. My readings of relevant literatures and consequent theoretical stance was also adapted and changed as I proceeded with the empirical work. This was to the point that that the full integration of social worlds theory with 'science in public' research I set out in Chapter 2 was not fully developed until a very late stage in the PhD.

This kind of approach to research is, I believe, quite consonant with the research philosophy known as 'grounded theory', advanced and developed by Anselm Strauss and others working within the Chicago tradition of symbolic interactionism (e.g. Glaser and Strauss, 1967; Strauss and Corbin, 1998).

> Grounded theory is a *general methodology* for developing theory that is grounded in data systematically gathered and analysed. Theory evolves during actual research, and it does this through continuous interplay between analysis and data collection. (Strauss and Corbin, 1994, p273)

Although they do not often overtly discuss it, many, if not all of the researchers who use social worlds theory to study the sciences utilise grounded theory approaches.[4] As such, it seems more than appropriate that I adopt some form of grounded theory stance alongside my attempts at a social worlds analysis of popular evolutionary psychology. As it turned out, I was employing this kind of approach in my work for a long time before I fully understood that it could be described as a grounded theory approach, or that it was a fundamental part of some of the literature I was trying to work from. Indeed, my initial move towards using social worlds theory was prompted by my recognition that

[4] See, e.g. Bazganger, Clarke, Fujimura, and Star and Bowker in Strauss and Corbin, (1997).

the interactions of groups described by Star and Griessemer (1989) in their study of the natural history museum, were fundamentally similar to my observations of academics, publishers and journalists in the evolutionary psychology controversy. This example also serves as a strong exemplar of how iterative strategies have played such a large part of my research.

Grounded theory is sometimes described as a fully inductive approach in which theory, if developed at all, is supposed to spring almost 'of its own volition', out of the data as it is analysed.[5] This is not necessarily the case. In fact, Strauss and Corbin (1994) stress the importance of incorporating and elaborating existing theories and previous work into research when appropriate. In a similar manner, grounded theory has generally been very closely associated with qualitative, interpretive social research. Again, Strauss and Corbin point out that grounded theory was originally developed with quantitative as well as qualitative research in mind, and that such an approach could easily be adopted by researchers using both approaches together (1994; p277). In fact, Strauss (1993), discusses at length the links between the pragmatic tradition[6] and symbolic interactionism. As such, it can be seen that my research design, use of theory, integration of different methods for data collection and analysis and overall philosophy about research are all congruent with each other.

I have deliberately decided not to address the relationship between media and popular discussions of evolutionary psychology and wider public perceptions, understandings and knowledge in the area. Bauer (2000) identifies a 'triangle model' of research on science in public, in which studies fall into three main classifications according to their subject of enquiry. Production studies examine the context of the production of popular science: how much, how, where and why is popular science produced? Mediation studies look at the content of popular science, comparing different forms and locations and looking for the main themes addressed in it. Reception studies look at the audiences for popular science, identifying them and the kinds of responses and interpretations they have to it. In these terms, this case study

[5] For example, this was how grounded theory was described in a research methods course I took early in my PhD. Perhaps unsurprisingly, at the time I thought that this was a silly idea for most forms of research.

[6] Also referred to by Tashakkori and Teddlie (1998) with respect to mixed methodology research.

could be described as largely a production-mediation study. However, I am interested in the *intended* audiences of popular EP and have spent some time investigating this issue in terms of the projected social worlds of evolutionary psychology.[7] However, I feel that to address the issue of whom those audiences *actually* are, or to assess their responses to this debate would involve a very different approach than the one I have taken here, and to do both would take far more time than was available. Obviously, I am interested in the relationships between popular evolutionary psychology and wider culture, and in what audiences who come across it think about it. To a point, it would seem fair to acknowledge the existence of a link between media professionals' decisions to cover evolutionary psychology and wider public interests, even if it is a problematic one.[8] An attempt at addressing this issue more directly would indeed make for an intriguing piece of follow up research, but I feel it was sensible to limit this case study to investigating the production and mediation of popular evolutionary psychology.

With all of this in mind, my research design proceeded in three main stages, each intended to answer different parts of the research objectives. The stages proceeded in approximately this order, but with certain overlaps. For example, the collection and analysis of qualitative material from the media was ongoing throughout the research process, and the CD-ROM analysis was returned to periodically in order to update it with new, more recently available data.

Stage I: Quantitative Analyses of Evolutionary Psychology in the Media

Two forms of quantitative analysis of evolutionary psychology media coverage were employed in this stage of the research. The first of these followed the same basic procedure used in the pilot study, searching CD-ROM databases of the broadsheet press for articles about evolutionary psychology. Crucially, as well as examining the frequency and timeframe of EP coverage, data was gathered on who wrote the articles and where they appeared in newspapers. Similar data were also collected for coverage of a related 'science' topic, allowing direct comparisons to be made between the two. The second analysis used material obtained from the CDs alongside that gathered from

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[7] As discussed in Chapter Two, section 2.4.2, and again in Chapter Seven.
[8] For more in-depth discussion of these issues, see Chapters Two and Six.

other print media sources, to carry out a true content analysis, examining the major themes of concern in EP coverage. Both datasets were analysed (using the computer spreadsheet package Excel) to produce descriptive statistics of the timeframes, authorship, locations and generalised content of media coverage of EP. This process also generated much of the raw data to be used in Stage Three of the research process. Together these analyses were intended to inform on research questions from objectives i, ii and iii, and these findings are discussed in detail in Chapter Four.

Stage II: In-Depth Interviewing

Following the success of the interviews carried out during the pilot project, further semi-structured interviews were carried out, talking with the major participants in popular coverage of evolutionary psychology. This included not only academics with an interest in the subject, but also journalists, writers, publishers and other media professionals who had been involved in some manner. An extremely helpful strategy used during these interviews was to present to participants some of the findings obtained from Stage One of the research as stimulus materials. This helped to generate discussion about ways in which the media covered EP, and the reasons for this coverage. These interviews were recorded and fully transcribed by me. Transcripts were subsequently coded and analysed using the qualitative data analysis computer package QSR NUD*IST version 5. This part of the research was intended to help answer most of the research questions in some way or another, but was particularly concerned with research objectives ii, iii, iv and v. Material from the interview transcripts is used in the discussions in Chapters Five, Six and Seven, but particularly chapter Seven.

Stage III: Qualitative Analysis of Texts

The media material about evolutionary psychology collected during stage one, alongside audio-visual material from other media sources was then also analysed qualitatively. This aided me in picking out the richer details of the major themes of discussion in the coverage (suggested by stage i.), as well as the rhetorical strategies employed by participants when arguing about EP. Because of the breadth, volume and variety of this material, it was analysed with a more flexible, discourse based approach, without the

help of computers, rather than the more formal strategy used in Stage Two. This stage was particularly intended to inform on research questions in objectives iii, iv, v and vi. It has contributed most strongly to the discussions in Chapters Five and Six, as well as a little to Chapter Seven.

3.5 ANALYTICAL FRAMEWORK

On the whole, my analytical approach is similar to that of my research design: broad based in order to see as much of the complex picture of popular EP as possible. I have combined a number of different analytical approaches to the material collected on popular evolutionary psychology. Most obviously, this has comprised the integration of a 'critical PUS' perspective on relationships between science, media and publics with social worlds theory, as I have laid out in the previous chapter, as well as the grounded theory approach to research described here. Consequently, key analytical concepts in use largely stem from social worlds theory, in particular, the central idea that the shared values and practices of the social worlds around EP will shape actors' interactions with each other and with the knowledge that is their work. Another central concept is that of the legitimacy to make claims of expertise about particular areas, and how this legitimacy is attained and maintained in the public domain. A particular concern of this maintenance is that of the boundaries of social worlds' domains, and how these can be manipulated to their best advantage through 'boundary work'. Furthermore, an understanding of how the different social worlds co-operate and compete through shared (and variable) discourses, ideas and 'boundary objects' is crucial to the analysis.

There are a number of other key concepts which have been important in guiding my research practice and thinking about popular evolutionary psychology. In keeping with wider ideas about the 'social shaping of technology' (MacKenzie, and Wajcman, 1999) and the 'mutual shaping of gender and technology' (Wajcman, 1991), I see the relationships between scientific knowledge, social context and popular debate as strongly akin to these ideas about the relationship between technology and society. As such, I would argue that science and society are interlinked and mutually constitutive domains, forming a 'seamless web', with popular debate moving through and between,

shaping and being shaped by them in the process. Throughout the study, I have attempted to adopt a 'symmetrical' approach to my material (e.g. Bloor, 1991), however, I have found that there are a number of obstacles to doing this in any straightforward way. The debate over evolutionary psychology is not one where there are two clear-cut, opposing sides. Instead, there are multiple complex, shifting positions of actors who engage together to create controversy, some of whom are more active in the academic domain, and others in the popular. It is also a 'live' controversy, which has unfolded as I have carried out my research, continues to develop, and is still a long way from reaching closure. This all means that it would be very difficult, if not impossible to locate a true 'middle' position from which to carry out a fully symmetrical analysis of popular evolutionary psychology debate.

My background in studying this area means that I will come to the analysis with some strong views about the knowledge claims being made about evolutionary psychology. In addition, I have argued in Chapter Six that because the subject matter of these claims is fundamentally political in nature, *all* people will hold opinions about it, and I cannot expect to be any exception in this. My own views on the issues have therefore, by necessity, influenced my analysis of the case study, although as I have found, relationships between political views and opinions of evolutionary psychology are by no means as straightforward as might perhaps be expected. Scott, Richards and Martin (1990) have argued that the goal of symmetrical analysis of scientific controversies is actually an impossible one, and that analysts of contemporary scientific controversies cannot avoid being drawn into the controversies they study. This often occurs for reasons similar to the ones described above, and through the phenomenon of 'capturing', whereby social research is taken up by participants and used by one side or another to advance their position.[9] It would seem quite likely that my research on evolutionary psychology will be beset by these problems, and perhaps I should follow Scott and her colleagues' advice and abandon a symmetrical stance, and instead take up a position within debate over evolutionary psychology.

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[9] For responses to this paper, and more extensive discussions of these issues, see a special issue of *Social Studies of Science* on 'The Politics of SSK: Neutrality, Commitment and Beyond', edited by Ashmore and Richards (1996)

There are several reasons why I have decided not to do this. For one, I have found I don't fully agree with any of the positions taken in popular debate over EP. This means that if I started to argue for my own views on the issues, this thesis would cease to be an STS analysis, and would become evolutionary psychology itself, or a sustained critique of the subject. This would make it very difficult to engage with my original research questions about popular science, public scientific debate, and science and social context. I am strongly sympathetic to Harry Collins' (1996) argument that even if perfect symmetry is not possible in practice, it can stand as a valuable goal worth striving towards. Precisely *because* of the strength of the claims being made about gender politics, I have found that some degree of 'standing back' from the issues has been necessary for me to be able to engage with the subject properly. It is also helpful to remember, as indeed Brian Martin (1996) has argued, that the symmetry postulate is at heart a *methodological* one, stating only that all sides in a controversy should be analysed on the same basis. It does not say that the researcher must abandon all political opinions, as they might if trying to be 'objective' about their research. As for the problems of 'capturing', once I start to publish my research, there is not actually that much I can do about that, other than to continue to assert the position set out here, and to try and maintain the good relations with all sides I have developed over the course of doing this research (c.f. Richards, 1996).

I find that Star and Griessemer's (1989) 'ecological' approach to social worlds is particularly helpful for addressing these problems as well as for analysing popular evolutionary psychology as a whole. The way in which it sets out to investigate *all* the social worlds involved, including academic and non-academic position, and looking at the interests and values of all perspectives involved, seems to me a logical expression of symmetry. Finally, I have also concentrated on another of Bloor's (1991) postulates: reflexivity, an idea which has also become central to much feminist research philosophy and practice (e.g. Longino, 1993). When talking to people about my research, one of the first things they want to know about is what I 'really' think about evolutionary psychology and the issues it raises. Because of this, it seems to me that the only honest way to proceed in my analysis of evolutionary psychology is to actively address my

opinions about the subject, rather than attempting to conceal them behind a 'neutral' analytical stance.[10]

As such, there are a number of crucial issues where the reader should know what I think, although this is quite difficult to do in a succinct way. A good start would be feminism. I have always described myself as a feminist, am interested in it on a professional as well as personal basis, and as such I find myself reacting angrily to some of the EP claims, as well as the way in which they are made. However, as I will be discussing in Chapter Five, being a feminist does not mean rejecting evolutionary and biological approaches to humans. As a social researcher as well as a human being, I feel very strongly that many of the evolutionary psychologists underplay, merely pay lip service to, or downright ignore the importance and influence of culture in human life, and that their approaches to research will almost inevitably do this. At the same time, I am still very interested in studies of humans and evolution, understand fully that we are evolved animals, and to an extent agree with the evolutionary psychologists that much of social science does ignore this aspect of our existence. However, I feel that the way in which many evolutionary psychologists attempt to learn about evolution and humans is grossly oversimplified on many levels, over theorised and tends to ignore empirical detail of how we get from evolutionary theories, through genes, proteins, brains and bodies, interactions of those bodies (society) out to what people do and why. In academia, I have a great deal more sympathy with approaches like behavioural ecology, which involve detailed observation of living animals in the context of their environments, each other and their evolutionary relatives. In recent years, some researchers have been working with anthropologists to try and do this kind of thing with contemporary humans (e.g. Smith et al, 2001) and this approach holds out hope for greater collaboration and productive integration of biological and social science study of humans.

[10] Although to an extent I have had to do precisely this in carrying out the research interviews: see section 3.6.3.

3.6 DATA COLLECTION

3.6.1 Media sources

Over the past four years I have been constantly in the process of collecting empirical material for this thesis - to the point where it is now quite difficult to get out of the habit! In today's Britain, the mass media quite literally never stop and, even if you try hard, it is extremely difficult to *not* be exposed to them in some form or other, without virtually exiling yourself from mainstream society. Therefore the most basic level of data collection I have used has been fairly simple: sensitising myself to the major issues, names and discourses associated with the topic of investigation, and keeping my eyes and ears open. This means being slightly more proactive than normal: keeping an eye on the newspapers (though not necessarily reading them cover to cover) and the general roundup of daily news in all media forms. Checking TV and radio schedules for relevant programming (recording these when possible) is also worthwhile, as is keeping an eye on the world of books for relevant publications and searching the Web regularly. Finally, I have found it very helpful to tell long-suffering friends, colleagues and relatives about my work, so that they can pass on any material they come across that I might have missed. In addition to this ongoing process, the Web provides additional resources: over the past few years, many newspapers and other media organisations have made their archives available online, and these can be searched retrospectively.[11] Another valuable source of material has been an email discussion list on evolutionary psychology, where new research and media reports relevant to EP are posted and commented on by list members, most of who are academics working in the area.[12] Physical archives of most media are also available through the British Library, but due to the constraints of the PhD, I decided there simply was not the time or resources available to be able to do these justice, and so did not use them. Through these various means, I have built up a large collection of material about evolutionary psychology in its various forms as it appeared in the 1990s UK media.

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[11] Unfortunately, many of these resources are now only accessible to subscribers, or on payment of a fee, but were free to access at the time.

[12] See http://groups.yahoo.com/group/evolutionary-psychology/

Furthermore, since the early 1990s all the British broadsheet newspapers[13] have archived their entire coverage on CD-ROMS, which are available in most university and some public libraries. These archives are accessible via fairly standard computer database interfaces and store the text of each article printed, plus headline, by-line and author if there is one. Extra information like the section of the paper, keywords and sometimes, even pictures are also provided, though less consistently. The major drawback of using these archives as a source of material is the loss of contextual information such as the layout of the page as it appears in the printed newspaper, images used to illustrate the story, and a clearer picture of where in the paper stories appear. However, the ease of collecting a focused sample of material in comparison to the difficulties (and time required) in looking through physical or microfiche archives more than compensate for these drawbacks. These archives provided around two-thirds of the overall material collected and the vast majority of that for the period 1992 – 1998, before I started my research in 1999. Therefore, a good part of this data collection has required skills at searching (often awkward and recalcitrant) computer databases. Unfortunately a proportion of the evolutionary psychology coverage avoided using the actual label of 'evolutionary psychology', opting instead for things like 'Darwinism', 'Darwinian psychology', not using a label at all, or instead referring only to authors or academics associated with the subject. Therefore, as well as searching for the phrase 'evolutionary psychology' in the databases, I also searched for terms associated with it, and for the names of the more prominent authors and scientists involved in debates over EP.[14] For every article pulled up by the databases, a range of quantitative data on when, where and who wrote it was recorded. This process yielded some data, but was then followed by some winnowing to identify the articles actually about the subject.

Many of the search terms were quite broad, and would turn up many unrelated stories (for example the term 'Darwinian' is often used in business or finance news to

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[13] All the daily broadsheet newspapers (*Times, Telegraph, Financial Times, Guardian, Independent*) and the Sunday papers (*Sunday Telegraph, Sunday Times, Independent on Sunday* and *Observer*). In Scotland, the Scottish press was available, but only from the mid-1990s and I couldn't find a consistent archive for the *Mail*, so these were excluded from the quantitative sample.

[14] The full list of search terms used was: 'evolutionary psychology', darwinism, darwinian, sociobiology, evolved, genetic, 'evolved + genetic', Steven Pinker, David Buss, Robert Wright, Robin Dunbar, Richard Dawkins, Geoffrey Miller, Helena Cronin, Dylan Evans, Steven Rose, Stephen Jay Gould, Matt Ridley.

denote competition; or a large proportion of the coverage of Richard Dawkins is about his ongoing attacks on organised religion). Judgements were made on whether each article was about EP or not, based on my familiarity with its concepts, discourses and actors, if it was, the article was copied from the database and printed. This led to a broader and more substantial collection of press articles about evolutionary psychology than would have been obtained by direct searches of 'evolutionary psychology' alone. This collection was then added to the sample of print material collected by other means (this also included articles from the tabloid and local press, news and popular science magazines). This sample of material, comprising 458 articles, was then subjected to a more detailed content analysis involving assessment of every article in printed form. This larger sample, alongside material from TV, radio and the Web, was finally retained for the later qualitative analysis.

3.6.2 Interviewing

During the MSc project, I carried out three research interviews, one with an academic closely involved in public debate over evolutionary psychology, and two with media professionals who had an interest in the area. I obtained all three interviews through personal contacts and carried them out on an exploratory basis with a loose interview schedule to guide me. As it turned out, these interviews proved to be highly successful, providing me with a great deal of useful material about popular evolutionary psychology. The insights I gained from these were instrumental in formulating the preliminary conclusions I drew from the pilot study, as well as in guiding my subsequent research strategy for the PhD project. In addition, I found that these interviews were particularly useful in probing at those areas which could not be investigated through studying media coverage alone. Issues of people's motivations, personal politics and social relationships tend not to be discussed in the public domain of the press, but can be much more easily accessed by asking about them in person. The same tends to go for finding out about professional modes of practice, attitudes and interests, which are also central to this research.

Therefore, I decided to continue interviewing for the full study. As before, a semi-structured format was adopted, although in this case using a more detailed interview

schedule. This was formulated using a number of sources, including the findings of the MSc research, the results of my quantitative studies, and from my ongoing qualitative analysis of media coverage. Several versions of the schedule were put together, with questions varying according to whether participants were academic or media professionals, and to what degree they had been directly involved in popular discussions of EP.[15] A significant innovation I made to my interview procedure was to incorporate some of the quantitative findings into the protocol itself. Towards the end of the schedule, I showed participants some of the graphs generated from the quantitative data, and asked for their responses. This was because the findings about unusual patterns of evolutionary psychology coverage (see Chapter 4) were so striking that I was interested to see what people's reactions would be, and I also wanted to try and find out why the media were covering EP in this way. It also helped in gaining rapport with sometimes impatient or wary scientific interviewees. In line with grounded theory procedures, I adapted and changed the interview schedules as I proceeded, learning which were the most and least effective lines of questioning, and how best to manage the time I had available in each encounter.

The first and most obvious priority for the PhD interviews was to talk to a far wider range of people than I had up until then. In particular, at this stage I had not been in contact with any of the central figures in popular evolutionary psychology. My aim was to interview a range of people from the different social worlds involved in popular evolutionary psychology. In terms of academic positions, this meant interviewing people calling themselves 'evolutionary psychologists' and other academics who had written on the subject in the media, as well as academics who worked in related subjects, but had not been involved in the public domain. I felt it was important to contact this last group to get some feeling for what the equivalent of 'bench scientists' in this area thought about popular coverage and controversy over evolutionary psychology. Alongside this, it was just as important to talk to people from media social worlds: this meant the obvious worlds of different media forms (newspapers, publishing, radio etc.), but also other contrasting worlds within the arena of the media. These included: science and non-science journalists; salaried and freelance journalists; editors and writers; popular science authors, and 'visible scientists': academics prominent in the public

[15] For samples of the interview schedules used, see Appendix 1.

domain. In practice, many of the people I was interested in talking to belonged to two or even three of these groupings, demonstrating the interlocking and overlapping nature of identities in a social worlds analysis.

With these considerations in mind, I drew up an initial 'hit list' list of people to contact. To start with, academics and authors who had appeared in the UK media in connection with evolutionary psychology were included. Because of budgetary and practical constraints, this was limited to people located in the UK, which helped to narrow things down. I could of course have done email or phone interviews, and did consider this for a time, before deciding that such a form would make it difficult to negotiate the complex and sometimes touchy issues I wanted to discuss, and would take the focus away from the specifically UK research context. I added to this list the names of any media professionals who had been connected with EP (for example journalists who had written on the topic, or the publishers of EP books); and easily accessible 'bench' scientists in the area. These were then contacted – by email or through formal letters, with email used as a preference due to its flexibility and informality. In addition, I utilised a 'snowballing' strategy, whereby I asked participants at the end of the interview if they had any suggestions of people I could or should approach for an interview. This proved particularly helpful in tapping into media networks, since many important media professionals such as producers, editors and public relations people, are not publicly visible or easily accessible without this kind of insider knowledge.

Of an original list of about thirty people, I contacted and eventually obtained interviews with sixteen of them, plus three more that were contacted via snowballing. Many of the suggestions made for potential interviewees were people who were on my list anyway, which indicated that I had a good initial sense of the network of people I was trying to talk to. The interviews carried out for the MSc research were also subsequently included into the sample, and one of these people was re-interviewed at greater length. This lead to a total of 21 interviewees included in the final analysis. I could have easily carried out more interviews, but stopped at the point where I was not really learning much that was new from new interviewees. Twelve of these participants were primarily employed in academia: three of these in psychology, four in biology and the rest in other social sciences or philosophy. Of the twelve academics, eight had been

involved with popular work in some sense. The other nine participants were all primarily media professionals. Six were freelance workers, while three were permanently employed by a media organisation. Five were science journalists or writers, one was a generalist journalist, while the remaining participants included a publishing editor, a radio producer and a publishing PR. In retrospect, it can be seen that academics were over-represented in this sample, for reasons that will be gone into later. Reflecting the regional bias of the UK media, the majority of my participants were located in London, meaning that I had to carry out the interviews in several block visits travelling from Scotland. As a rule, I met with people at a time and place of their convenience, and the majority of the interviews were carried out in people's offices and workplaces. I generally let the participants set the pace and length of the interviews, such that they varied from twenty minutes (timed) to over two and a half hours. However, I would say that most of the interviews averaged at about an hour and a half, providing large amounts of material for analysis.

The interviews were all tape-recorded with the full consent of participants, and I subsequently transcribed them in full. Before starting the interview stage of the research, I felt that there would be some problems with the normal procedures for anonymising interviewees in social research. This was for a number of reasons, mostly to do with the increased chances of any anonymity I conferred being compromised by the public nature of these people's work. Many of the participants are public figures: not hugely famous, but prominent authors and academics, and others are journalists who write on a daily basis in the media. This means that people's distinctive speech or discourse patterns are more likely to be recognised, a problem compounded by the small numbers of people involved in both evolutionary psychology and media networks. For example, there are only ten or so full time science journalists working in the UK press as a whole.[16] As well as these ethical considerations, the fundamental nature of the social worlds analysis means that it is vitally important to look at what people say in interview in the context of *who they are*. A statement such as, "evolutionary psychology is the most

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[16] This is a point that was brought home to me quite forcefully when I recognised the source of a quote used in a published research article about UK science journalism. If I can do this, then participants' colleagues can too!

scientific way to study humans", changes hugely in significance and meaning according to who said it and the context of the statement.

Therefore, I made it clear at the beginning of interviews that the consent I was asking for at the time was only for the tape recording of the interview. Any statement that they specifically wanted 'off the record' would stay so, and I would be in touch with them again at a later date in order to obtain their consent to use quotations in my thesis and any subsequently published research articles. This would then be subject to negotiation, with quotes being used and attributed, used and anonymised, or not used at all according to their preference. This arrangement, which perhaps left an undue amount of control over my research in the hands of the participants, helped me obtain co-operation and disclosure about a sometimes fraught public controversy, in a way that might not have happened otherwise. In particular, it helped me to underline the differences between social research and journalistic interviews, which many of the participants are involved with on a regular basis, and which operate under quite different conditions regarding the use of information. Although some of the participants seemed unbothered by these issues of consent and were somewhat nonplussed by my going through this procedure, others seemed to appreciate it, and were active in negotiating around this during their interviews.

However, after carrying out the transcription and analysis of the interview material, I found I had to review the position I had taken initially. Many of the statements that had been made were quite strongly worded, and as I describe in the later chapters, controversies over evolutionary psychology have been extremely intense and often ill-tempered. As one of my interviewees put it after we had finished, I was 'researching through the middle of a mine field', and as such I was intensely aware of the vulnerability of my position as a junior researcher from another field. I eventually reached a compromise decision, whereby I have not attributed quotes to people by name, but have identified them by their professional position. This has meant that it is fairly likely that the interviewees and other actors in popular evolutionary psychology might be able to guess at the participants' identities, but not be able to confirm them, or attribute quotes to them by name. Outside of this group, which as I have already explained is actually quite restricted, positive identification would be far more difficult.

I therefore contacted all the interviewees towards the end of the study, explaining the situation and offering drafts if they would like to check the quotes I had used. As it turned out, none of the interviewees objected to this strategy, and many of them thanked me for my candour in keeping them informed of the situation.

3.6.3 Reflections on doing research interviews

As a young, female PhD student, when interviewing these relatively powerful academics and media professionals, I found myself dealing with some unusual issues around the dynamics of access and power in many interview situations of 'studying up' (Nader, 1972). A great deal of methodological discussion of qualitative interviewing has focussed on the implications of dynamics between a more powerful researcher and the less empowered research participant, and how to get around the problems that this poses. This is because most social research is carried out by academics, who are by definition privileged people, on or about people who are not generally professionals of the same status, and are often underprivileged. In particular, feminist researchers have addressed these issues from a gender perspective, arguing that the research dynamic typified by a male researcher questioning a woman creates a power imbalance so problematic that it becomes a significant barrier. They argue that not only will the information elicited be strongly limited or changed by these power imbalances, but that the situation also creates significant ethical problems for research (e.g. Oakley, 1981). The greater power of the researcher may mean that interviewees feel under pressure to disclose information they might not otherwise, or will be made to feel uncomfortable, and furthermore, these problems will exist whether the researcher is male or female. In the light of this discussion, feminist researchers argue that interviewers should sensitise themselves to these dynamics and work hard to equalise the balance of power with research participants. This can be done in a number of ways, but most importantly involve making the interview situation more like a conversation between friends, with the researcher behaving in a non-authoritative manner and disclosing information about themselves from time to time.

However, in my research I often found myself in almost exactly the opposite situation, with all of my interviewees being older than me, the majority being men and in

addition senior professionals in academia and the media. As a PhD student, interviewing senior academics also posed particular problems, in that both they and I were used to interacting with the other person (academics or students) in a context of teaching, research training and supervision. The tendency for our interactions to fall into this pattern was particularly acute with the academics working in fields close to my own, but seemed to be present to an extent with all of them. I also faced barriers in terms of the very interdisciplinary politics under research in this thesis. In general, and particularly in the context of the Science Wars,[17] many of my interviewees had a tendency to be very dismissive or even actively hostile to STS, qualitative social research, feminist approaches, sociology or even social sciences in general. To be fair, this is often reciprocated, with the most vehement criticisms of quantitative social science, psychological research and of course sociobiology / evolutionary psychology having come from precisely these quarters. In describing her experiences of interviewing primatologists about their work, Amanda Rees (2001) describes negotiating precisely the same tensions I experienced, suggesting this may be a more widespread problem in STS research than is generally acknowledged. I also encountered problems with interviewing the media professionals, who were also well established people in their own careers. These problems stemmed more from the strong differences in working practices between academia and the media. I often had much more trouble with contacting them, with negotiating the access and time available for interviews (journalists are very busy people), and with expressing my questions concisely and clearly enough for their satisfaction.

As it turned out, my experiences of the gendered nature of power relationships in interviews were quite contrary to some of these expectations. On the whole, I didn't find it particularly difficult to interview the male participants, and in fact there seemed to be significantly more tensions present in the interviews with women (6 out of the 21 interviewees). Although some of these interviews did indeed reflect the friendly exchanges of information described by feminists when women interview women, more typically I found them to be difficult experiences, characterised by mutual wariness. I believe that the gender political issues at the centre of controversy over popular

[17] Links between the Science Wars and evolutionary psychology / sociobiology controversies will be discussed at length in Chapter Five.

evolutionary psychology compounded these problems: as a female researcher from a sociology department, people expected me to take a strong feminist / anti-EP position. This meant that many of the broadly pro-EP people approached the interview in a very defensive manner, and for some of the women, this defensiveness was accentuated:

Me: Do you think that the kinds of stories (EP) fit in well with what's happening in gender politics at the moment...
Interviewee: [*cuts in*] Tabloids in general don't do feminism…
Me: yeah
Interviewee: We're not big on feminism! (laughs)
(Respondent 15 - science writer, broadcaster: interview, 22/01/02)

This exchange illustrates this point, as well as that about my communication problems with media professionals: I was asking about gender in a broad sense, but the interviewee instantly assumed I was making some kind of critical point about feminism and evolutionary psychology. She had limited the time available for the interview to a strict twenty minutes, so I had neither the time nor the power to renegotiate the question. At the opposite end of the scale, I found that when interviewing feminist women involved in arguing against evolutionary psychology, it would generally be assumed that I was 'on side' with them and their allies. On one occasion, I also found myself having to defend my own analytic position as a relativist STS researcher (and younger, perhaps suspiciously post-modern feminist), rather than as a 'good' feminist pitching in with research directly critiquing evolutionary psychology.

Interviewing 'up' - asking questions of the more powerful, is potentially as damaging to research as the opposite situation can be. Struggles over access, time and disclosure become more acute, and although the interviewer sets the agenda by asking the questions, the chances of this being turned around are very high (e.g. Traweek, 1995). In addition, asking questions of people of a high social status who are not necessarily used to answering such questions can make them uncomfortable and therefore even less co-operative. These experiences are ones that have been shared by other social researchers when interviewing powerful women: Nirmal Puwar, (1997) describes in her experiences of interviewing women MPs very similar oscillations between friendly exchange and suspicious struggle to those I encountered. Dianne Millen (1997) interviewed female scientists about their experiences as women in science, many of

whom were indifferent or hostile to feminism.[18] She describes dealing with similar tensions, and furthermore suggests that her attempts to carry out this work using feminist research methods became a hindrance to her ultimate aim of improving the position of women in science. Despite all of these problems, I actually found some of the basic ideas of feminist research methodology to be very helpful in addressing the situation. I took the essence of this to be the idea of trying to create an interview situation in which power differentials are compensated for or played down as much as possible.

Because of these problems, which I had largely anticipated prior to carrying out the interviews, I employed a number of strategies to help mitigate the situation. In Millen's (1997) case, she made sure to present herself as doing 'neutral' social research, rather than as directly stating her work was feminist. In a similar manner, when introducing myself in emails and letters, I described my research as being about 'science communication' or 'evolutionary psychology and the media'. This description was not inaccurate, but was one that played down aspects of my approach which participants might find problematic (like sociology), and stressed the now 'legitimate' practice among scientists of science communication. Like Millen, I emphasised an undergraduate background in the sciences: her as a physical scientist, myself as a student of psychology and zoology. In practice, I found that this went much further than being a matter of initial appearances, as often during the progress of the interview I would catch references and allusions to important ideas in the field. This underlined my status as a kind of 'insider', with at least some sympathy for the views being expressed, and helped to get interviewees to relax and open up a bit more. In line with basic qualitative and feminist research practice, I adopted a 'friendly yet professional' demeanour, attempting to elicit as much rapport with the interviewees as I could, alongside giving the standard nods, 'mmhmms', agreeing noises and the like, as responses to what they were saying. In general, I adopted as non-confrontational a stance as I could, and interview schedules were used in a non-directive and flexible way, allowing the participants time and space to speak about the issues they found to be of interest. Finally, the use of the quantitative findings also helped do some of this 'balancing' work, strengthening my

[18] However, unlike Millen, I would not agree that my interviewees could be fairly characterised as 'non-feminist', the issue was more one of the differing forms of feminism currently in play in our society.

position by providing the interviewees with information that they valued (how the media was covering EP), while helping to eliciting responses from them about these findings.

On the whole, I found the process of interviewing to be a very enjoyable, exhilarating and interesting one. I enjoyed meeting with these people, some of whose work I have been following for many years, and many of whom were very genial, interesting and funny in person. My strategies for coping with potential hostility did seem to work most of the time, even with the more difficult people. The single biggest factor that helped me once I got into the interview situation was quite simply the subject matter: I was asking people about their work, which in general was something they were very passionate about. The questions I asked seemed to engage them well, were obviously thought provoking, and they often seemed to enjoy the opportunity to reflect on the wider implications of what they did for a living. For me, this process of engagement was typified by my experience with one professor. When I arrived for the interview, which took place in his office, he sat behind a desk piled high with books and papers and put me on the other side. Initially, I had to balance my tape recorder precariously on top of this literal barrier, and try and talk to him through/round it. By the end of the interview, when I brought out my quantitative material, he had moved around to sit next to me and was relaxed and very chatty. In the end, this interview lasted two and a half hours, and proved to be the longest one I carried out. In practice, I found that adopting a neutral stance was quite easy to do, even when interviewees came out with some pretty pungent statements about sociologists, feminists, postmodernists, relativists, etc. It also seemed that often I would not assess the full import of what had been said until after the interview was over.

As I mentioned above, some of the biggest problems I encountered came when working with media professionals, especially journalists. In retrospect, I think that academics are over-represented in my sample of interviewees, while several media social worlds are under-represented or even absent. For example, there is only one representative each from the worlds of publishing and radio, whilst I did not manage to interview any newspaper editors, or anyone who had worked on a TV production about evolutionary psychology. This came about through a combination of events, starting

with my initial strategies for making contact with interviewees. My longstanding familiarity with the network of academics around evolutionary psychology meant that at a relatively early stage I could identify the people that I wanted to interview. Academics are very easy to locate and contact through university websites and publicly available email addresses, and this alongside my being used to interacting with academics through my ongoing education, meant that I started approaching academics earlier and in greater numbers than I did media people. I was and am an outsider to media networks and this unfamiliarity was compounded by the fact that many media professionals are not publicly visible, easy to contact or likely to have the time spare to respond to requests from social researchers. These factors, combined with a certain lack of confidence on my part meant that more of the media interviews were carried out at the later stages of the interview study. Particularly because of the length of the interviews and therefore sheer volume of material collected, there reached a point where I had to stop interviewing, especially as it seemed I was not learning anything new. As things turned out, this point was reached before I had managed to engage fully with all media groups, but I did feel that I had reached the most important ones for the EP case, and so made a pragmatic decision to stop.

Although my non-confrontational and non-directive strategy in interviewing did seem to pay off and helped defuse much of the potential tension, after reviewing the transcripts it seems that perhaps sometimes I took this a bit too far. Although the academics enjoyed the opportunity to ramble and much of the material gained in this way was very useful, it seemed that the media people had less patience with this approach and wanted me to 'get to the point' more. At times, the strategy spilled over into a lack of assertiveness which at times allowed the participants to take control of the agenda a bit too much and to sometimes steer the topic of discussion away from more sensitive issues. In line with these observed problems, I think that it would have actually paid off to be a bit more assertive, and to also adopt a more direct line of questioning when it came to asking participants for their thoughts on the political implications of evolutionary psychology in particular.

Finally, I feel that there are some ethical concerns with regard to how I approached my participants, and underplayed some of the aims of the research and my own

opinions regarding evolutionary psychology. Duncombe and Jessop (2002) discuss similar concerns in terms of the ethics of 'faking friendship' in qualitative interviewing, particularly in the context of researching more personal and emotional issues such as parenting after divorce. They argue that qualitative interview practices of expressing empathy, rapport and agreement with interviewees can create false and possibly exploitative situations, which can cause problems for interviewees and researchers alike. Although my research was carried out in an unambiguously professional context, in which personal issues of any kind were rarely discussed, the debate over evolutionary psychology is a deeply felt and passionate one. As such, I did at times feel somewhat equivocal about the ways in which I presented myself to interviewees. However, I feel that my procedure of negotiated consent has meant that the participants have had a full opportunity to see what I am doing with their material. I plan to continue being as open as I can in my dealings with them, and also hope that the reflexive stance I have taken in the write up of the research will help to head off these problems. Certainly, I don't think that my approach presents anything like the same level of ethical, personal or emotional dilemmas described by Dunscombe and Jessop (2002), largely because the subject matter is essentially professional and public in nature, rather than personal and private.

3.7 DATA ANALYSIS

As with the rest of the research design, my approach to data analysis has involved using multiple methods on the various data sources in use. This means using both quantitative and qualitative approaches, at times on the same, and at others on different parts of the material collected from media coverage and interviews. In particular, the use of qualitative analysis besides two different quantitative methods on the media material allows for a very strong triangulation of data, and makes the validity of the conclusions reached very much stronger. Therefore, I have carried out two forms of quantitative analysis on the media coverage of evolutionary psychology, comprising an analysis of material available from CD-ROM archives of the broadsheet press, alongside a more extensive 'content analysis' of all the material collected. Alongside these,

qualitative analyses of this material and of the interview transcripts have also been carried out, with different approaches in use for the different forms of data collected.

The main aim of doing quantitative analysis on the media coverage of evolutionary psychology was initially to build up a reliable picture of when and where EP was appearing in one of its most important and consistently available media: the daily broadsheet press. Although no attempt has been made to do a similar analysis for the other forms of media addressed in the thesis, not least because their internal organisation is so different, studies have shown that the science content of different media tends not to vary a great deal (e.g. Hansen, 1992). Therefore, I would argue that Bauer et al's (1995, p14), conclusion that 'the press indicator represents the fluctuations and structure of media science in general, including TV and radio' will also broadly hold for this analysis. Two different forms of analysis were carried out in order to investigate different aspects of this coverage, and both drew quite strongly on the research literature in content analyses of science in the media (e.g. Bader, 1990; Bauer et al, 1995; Evans, 1995; Weiss and Singer, 1988).

The CD-ROM analysis was based upon procedures used in such studies, where contextual information about articles is routinely recorded: when and where they appear, how long they are, and the like. The CD analysis was not actually interested in the content of articles, so therefore was not a 'content analysis' as such. Its aims were to find out the timeframe and extent of coverage, including how this changed over time and also, more specifically, to find out if this coverage was in any way different to that given other sciences. Because of this narrow focus, I decided to also carry out a basic form of content analysis, bringing in material from other sources, and addressing questions of the themes addressed in, and evaluative tones of evolutionary psychology coverage. However, these quantitative analyses were never intended to be the major focus of this research project, and as such were designed to provide a basic descriptive picture of the media coverage which would act as a backdrop to the much more in-depth qualitative investigations. Because of this, and the time and manpower constraints imposed by the mixed methodology research design, the coding frames used were very much simpler than those typical in content analysis.

In a similar light, I also made the decision not to employ statistical testing in either analysis, as is standard in this area, and concentrate instead on descriptive statistics to establish my conclusions. This was for several reasons: although I have had training in statistical testing, it was for use in experimental animal behaviour research, rather than for the social sciences, and occurred some years ago. My postgraduate training has concentrated on qualitative research methods, as it needed to, and there simply wasn't time to update my skills in quantitative research as well, especially as I would need to be trained in the use of a data analysis package such as SPSS (the ones I had used as an undergraduate are no longer current). Finally, I felt I had retained sufficient quantitative skills to confidently handle descriptive statistics, and also to know that much of the data did not meet certain criteria for testing, such as the independence of variables.[19] This would mean that if statistical testing were employed, it would be far from straightforward, and again would require a much greater degree of expertise than I felt I had or could access easily. This means that any conclusions drawn from the quantitative data would be much more tentative, but I judged that data triangulation from the qualitative parts of the study would help to compensate for this weakness. Findings from the interview material and media coverage helped to support my interpretations of the quantitative data, which were in any case fairly simple and straightforward.

3.7.1 CD-ROM analysis

As was discussed earlier, quantitative data on the coverage of evolutionary psychology by the UK broadsheet press was recorded. This was done by means of searching the newspapers' CD-ROM archives with a variety of terms related to evolutionary psychology and seeing how many articles were brought up for each month, year and newspaper. The aim of this was to provide a broad picture of the occurrence of the phrase 'evolutionary psychology' and associated terms in the broadsheet press, looking at changes over time and comparing the amounts of coverage in different publications. Preliminary findings from the MSc research had suggested that the media was covering evolutionary psychology in a different way to the other sciences. In

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[19] For example, the number of article 'hits' on the CD-ROM for an evolutionary psychology author would include a number of the same articles as those brought up when searching for 'evolutionary psychology' itself, muddying the statistical waters.

general terms, the majority of science appears in the media as news items about scientific research findings, or as longer feature articles in science sections. In contrast to this picture, I found that evolutionary psychology appeared to be turning up as the subject of weekend magazine articles, book reviews and columns, rather than in the more typical 'scientific' sites for coverage.

This general picture of where science appears in newspapers is one that is familiar in the literature on science and the media (e.g. Gregory & Miler, 1998; Scanlon, Whitelegg, and Yates, 1999). However, while detailed content analyses of science in newspapers often record information about where in newspapers articles appear, a closer examination of the literature shows that these particular findings are rarely, if ever published (e.g. Bauer et al, 1995). There are also methodological problems with comparing different content analyses, as very often different definitions of 'science' are used (including all research, including natural sciences only, including medicine?), as well as different publications, timeframes and measures of location in newspapers (page number or section). Therefore, for the purposes of the PhD research, I decided to rely upon an internal comparison between evolutionary psychology coverage and that of another science subject in the same newspapers over the same time period.

The database format of these newspaper archives, by creating an absolute internal reliability of data,[20] offered an ideal way of finding out whether these impressions had any empirical basis. Therefore, data on what part of the newspaper articles were in, and the types of author writing, were recorded. The inclusion of the search term 'evolved + genetic', which searched for articles containing both these words allowed for a *direct* comparison with 'evolutionary psychology' articles across the entire broadsheet press over the same time period. Articles with this search term tended to be mostly about things like genetic engineering and evolutionary biology, subjects that could perhaps be described as classically 'scientific'. The data recorded for every database 'hit' on the search terms described above were as follows:

- the newspaper, month and year of publication

[20] That is, multiple searches for the same term for the same time period will always come out with identical results.

- location within the paper (main/news; science supplement; weekday supplement; weekend supplement; column or comment; letters)
- type of writer (science journalist; other journalist; academic/book author; reader).[21]

These data were then entered into a series of Excel spreadsheets, allowing figures for the monthly and yearly coverage levels in each paper and for all the press to be calculated. Comparison figures for newspaper locations and authorship of the 'evolutionary psychology' and 'evolved + genetic' searches were also generated in this manner. The graphical plotting facility in Excel was then used to generate clear descriptive statistics looking at time trends, distributions and comparisons of these data on the press coverage of EP and its related terms, presented in Chapter Three.

3.7.2 Print media content analysis

I then decided that a second, more detailed analysis of the press coverage of evolutionary psychology would also be called for, for several reasons. To start with, a simple CD-ROM archive search on 'evolutionary psychology' missed a good deal of discussion of the subject, while searches for related terms brought up a great deal of irrelevant material. A more accurate picture of how much the press was covering evolutionary psychology was required. Secondly, the CD-ROM analysis was only of the *broadsheet* press, whereas I had collected a good-sized sample of material from other print media sources, which could not have been included in it. Thirdly, the design of the CD-ROM analysis meant that no information had been gathered on the actual *content* of the media coverage of EP. Many of the claims of EP have very strong social and political implications, and I knew that these were being discussed in the media. However, I had no measure of to what extent particular kinds of issues were being discussed, whether the people writing them agreed with the claims made by evolutionary psychologists, or how much space was being devoted to detailed discussion of each of them.

A content analysis (Holsti, 1969; Krippendorf, 1980; Weber, 1990) of the material would provide all of this information and would also be helpful in generating a

[21] For a sample copy of data recording sheets used, see Appendix 2.

framework from which qualitative analysis could be carried out. In general, content analysis involves taking a sample of some form of document (this is often taken as the mass media, but can also include any other kind of document, such as letters, diaries or speeches) and then defining a series of categories by which it can be classified. These will vary according to the research questions being asked, but often include things like the evaluative tone, level of detail and presence/absence of a range of topics of discussion (Robson, 1993, p272-81). In practice, much of the basic work of content analysis is very similar to procedures used in qualitative 'coding' of material, and the dividing line between the two is actually a very fine one, as acknowledged by Altheide (1996). The differences come in what is done with the material once it is categorised - rather than using these categories to generate qualitative discussion of the findings, in content analysis the categories are then used to generate quantitative data about the material. For the reasons discussed above, I decided to carry out a scaled down version of content analysis on the media material, in which a fairly simple coding frame was used, and no statistical testing was employed. The simplicity of the coding frame was such that it provided a strong framework for carrying out the subsequent qualitative analysis, continuing with the ongoing theme of a mixed methodology, grounded theory research design.

Therefore, the articles obtained from the broadsheet archive searches judged to be about evolutionary psychology were added to the other print media material to make a final sample of 458 articles dating from 1992 up to the year 2000.[22] These were all in print form, which allowed for a full examination of the content. Each article was coded in terms of:

- date
- publication
- type of article (research/news report; column; review; feature; letter)
- length (under 500 words; 500-1000; above 1000 words)
- tone (promoting EP; accepting; sceptical; opposing)
- emphasis of article (mostly about EP; mostly about something else)

[22] Further data was gathered for the year 2001 for the CD-ROM analysis, but not for the content analysis, due to the constraints of the PhD.

- primary and secondary content themes (biological determinism; darwinism in culture; gender politics; sexuality; science in culture).

Judgements on these classifications were made by myself alone: the nature of the PhD meant that there was no suitably qualified colleague available to counter-assess the content analysis, as is normal practice with this kind of research. Again, the data generated from this process were entered into an Excel spreadsheet and appropriate descriptive statistics were calculated and presented in graphical format in Chapter Three.

3.7.3 Qualitative analysis of interviews

All of the data collected from the various sources described above: the interview transcripts, the sample of print media material on evolutionary psychology, and material collected from other sources such as television and radio programmes and the Web, was then analysed qualitatively. I used two different styles of analysis on the interview and media material, as they involved quite different volumes and forms of material, and was also always intended to address different parts of the research questions.

The material collected during the research interviews was, as such material tends to be, very dense, multilayered and complex, and as such required an intensive approach to analysis. I transcribed the interview tapes in full myself, including in the transcripts side comments about the situation as a whole and any non-verbal events of significance that I could remember. They were then loaded into the qualitative data analysis computer package QSR NUD*IST N5 for coding and analysis. During the interviews, there was a substantial amount of discussion of the social and political contexts of evolutionary psychology, and this material was duly brought into the analysis in Chapter Five. However, the main aim of the interviews was to investigate broader perspectives on expertise, differing forms of science and relationships with the public domain surrounding the interactions between evolutionary psychology and the media. As such, the interview material provided the main basis for discussions in Chapters Six and Seven. The coding tree developed will not be gone into in depth here, but was based around six main themes of discussion:

- labels and definitions of what evolutionary psychology is and isn't

- nature and culture: what people thought was relationship between the two, especially re. natural and social sciences
- audiences and publics for evolutionary psychology discussions
- the media and evolutionary psychology
- social and political contexts of popular evolutionary psychology

I found that once this was done, I could use the printouts of each coding category in a fairly straightforward manner to inform my writing about the issues addressed, although I did find I had to refer back to the original interview transcripts fairly often.

3.7.4 Qualitative analysis of media material

In contrast to the interviews, the breadth and volume of sources and forms of material obtained from the media coverage of evolutionary psychology made the prospect of analysing it in the same way completely untenable. Although the prospect of integrating everything into a single 'uberproject' on NUD*IST was intriguing, in the end I decided against it for a number of reasons. To start with, although the bulk of the media material was in a format suitable for NUD*IST, having come straight out of the electronic format of the CD-ROMS, a fair proportion was not, and it seemed that text-recognition software at the time was still not quite up to the task of scanning newspaper clippings and random photocopies (never mind manually entering it!). I also wanted to include audiovisual material from illustrations, TV and radio programmes, and NUD*IST would certainly have much more trouble coping with these. Finally, I had always intended that this body of material would, on the whole, help me address a quite different set of research questions to the interviews, meaning that the coding developed for it would have had to be different anyway.

This meant that ultimately a flexible, and more traditional (paper based) approach was taken with the media material, in which it was analysed on an ongoing basis throughout the PhD. As things appeared in the media, I would physically collect them (through printouts, photocopies, or recordings as appropriate), but also give them an initial read/watch/listen and perhaps make some notes on anything I found particularly striking about the item. It would then be added to a growing collection of material.

Because of the sheer volume of material collected, much of the data analysis actually consisted of a series of winnowing processes, gradually reducing the amount of material being worked with down to manageable levels. Towards the end of the project, I collated together the print material, putting it into date order, removing duplicates and separating out the Web/US material into a separate sample. It was then roughly coded, using highlighter pens to pick out passages relevant to the following basic categories, roughly corresponded with those coming out of the quantitative content analysis, plus the other important themes of expertise and boundaries.

- sexuality and/or gender politics
- biological determinism / free will / Darwinism in culture
- science and society
- expertise
- construction of boundaries

The extra material from sources such as the Web and TV/radio was then brought in where appropriate and altogether formed the basis of a discourse analysis (e.g. van Dijk, 1991; Fairclough, 1989) of the social and political contexts of popular debate over evolutionary psychology, which can been seen in Chapter Five. This analysis also contributed, to the discussions of expertise and audiences seen in Chapter Six, and of public science and 'boundary work' in Chapter Seven.

In general, when working on one of these chapters, I would go through the following procedure for analysing the media material. Before writing the chapter, I would get out the overall sample of media articles on evolutionary psychology, which is a pile of A4 printouts and newspaper clippings about a foot high. I would then go through these, pulling out those articles that had been coded as relevant for that chapter. This could not have been done during the original coding because many of the articles contained material relevant to more than one of the codes. However, simply pulling out everything coded for the chapter would have resulted in far too much material, so I only separated out those articles that struck me as particularly pertinent to the themes being addressed. While doing this, I was refreshing my memory of what had been written about the issue at hand, mentally 'marking' any passages that seemed useful, and starting to organise my thoughts about the chapter. Sometimes I would transcribe some quotes

and/or images into the chapter at this stage, and then start to construct the piece around them, but in general I would start writing, and then search for material to illustrate the point being made.

3.8 REFLECTIONS ON THE RESEARCH PROCESS

In this chapter, I have explained the design, methodologies and overall approach to research employed in this investigation of popular evolutionary psychology. I have explained how I came to undertake this research with an initial pilot study carried out as part of my MSc, and how I incorporated what I had learned from this work into designing the PhD. Based upon these findings and my reading of the literature in science in public and social worlds theory, I described my overall research aims, objectives for the project and research questions. Following on from this earlier work, the study was designed as a mixed methodology project, employing an iterative, grounded theory approach in which I moved backwards and forwards between previous literature, sociological theory, empirical research and analytical work throughout the research. I then described in detail the methods of data collection and analysis that have been used, describing how these were carried out, and why I decided to do them in the way that I did. This included a long reflection on my experiences of doing research interviews for the project, which I had never done before. I found that doing a study like mine, where I needed to interview senior academics and media professionals about some quite contentious issues, posed some unique problems of 'studying up', which has not often been addressed in the social sciences in general, and hardly at all in STS. Before moving on to talk about my research findings, I will briefly reflect on how my research design worked out in practice, and some of the changes I would make with the benefit of hindsight.

8.1.1 Problems and flaws in the research

Like many PhDs, this one has had ongoing problems with keeping the project focussed and within the bounds of what is possible for one person to do under the strictures of a PhD. The very nature of evolutionary psychology and of popular science

as sprawling, vague and interconnected things have made it particularly difficult to keep things under control. Since I first started working on this during my MSc research, I have recognised this problem, and my used of a mixed methodology research design has been my major strategy in combating this problem. This might at first seem counterintuitive, because it has certainly made for a good deal more empirical work for me to do. However, all of this work has meant I have been able to put together a comprehensive picture of evolutionary psychology as it appeared in the media through the mid to late 1990s, at least to my satisfaction. What I have done is bring together a range of ideas and material together to focus on this specific phenomenon, rather than starting with popular EP and working outwards, which potentially could never end... Because there has been no prior research on evolutionary psychology and very little on Sociobiology either, there wasn't really a specific body of work to build on in designing my project, and had to pull together literature from many diverse areas of research.

Methodologically, I felt that research using only content analysis, discourse analysis or research interviewing alone would leave me with a very partial picture of what was going on. It would also leave me very ill equipped to answer my initial query of why evolutionary psychology appeared in the UK media in the form that it did. The integration of different theoretical concepts, as well as methodologies, has allowed me to do this to my own satisfaction. I do feel that, as well as being the project's greatest strength, this approach is in many ways also its greatest weakness. In order to be able to get through all the empirical work that needed doing, I have inevitably had to make compromises on the comprehensiveness of some of the research methods. Examples of these compromises have included the following: only doing content analysis on print media coverage and not analysing TV and radio programming at length as well as the decision to stick to descriptive statistics in the quantitative analysis. From the perspective of having completed the work, it does seem that these compromises were necessary in order to pursue the mixed methodology design on my own. Any loss of depth in each specific area here was compensated for by breadth, which allowed me to see more of what was going on, which in turn created an overall depth of analysis in my work.

With the benefit of hindsight there are however a number of smaller things that I would do differently. The idea of inputting all the material I collected onto a computer, and analysing the media coverage as well as the interviews using NUD*IST is still a tempting one, particularly considering the sheer volume of media material there was, and the difficulties of managing it all in paper form. With advances in scanning and text recognition technology, this is a much more viable prospect than it was four years ago, and if I was starting on a similar piece of research now, I would probably do it. This would be particularly the case if newer versions of the software have the capacity to cope with audio-visual as well as textual material. Given some time to retrain and learn some statistics methodology for social science research, I would also have done the appropriate testing in this part of the study, but without this I would still have stuck to descriptive statistics.

I do feel that although this strategy has involved a lot of work for me I have learnt a lot about doing research through it. I also feel that though I have had to make some compromises with some of the methods employed, the overall result has been a considerably broader, more robust and stronger piece of research. On a final note, there is an ongoing problem with how I analyse and interpret much of my qualitative material, where I have had to be careful about taking much of what has been said to me in person, or written in the media, at face value. Rather than a straightforward recounting of actual events, ideas or opinions, during the interviews I was very aware that often the interviewees were rehearsing their own 'stories' of how their social world worked and why it was right or justified. A good example of this might be the repeated references to a Max Planck quote about people never being able to convince their academic opponents.[23] However, by the time it got to my analysis it was easy to forget about this, as it was in some cases years later. I eventually found that the only way around it was to bear in mind that this may actually be the case with any quote being used and to point out what is happening when possible.

[23] Discussed at greater length in Chapter Seven, section 7.4.

This issue is summed up supremely well in the following reflection from Amanda Rees on interviewing scientists, which I think also holds for the analysis of media material.

> what we are actually dealing with is a situation in which two people create an account of events past through a negotiation of their mutual expectations, appraisals and memories. It may be that these apparent limitations are an inevitable part of an attempt by one researcher primate to study the actions of other researcher primates as they attempt to analyze the activities of yet more primates. (Rees, 2001, p230)

Chapter IV:

Evolutionary Psychology in the UK Media

4.1 INTRODUCTION

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4.7 EVOLUTIONARY PSYCHOLOGY IN THE UK MEDIA

Chapter IV:

Evolutionary Psychology in the UK Media

4.1 INTRODUCTION

When trying to find out about popular evolutionary psychology in the UK of the 1990s, a good place to start is to look at the mass media, as this is the forum where EP has appeared. Which forms of media did it appear in and to what extent, which people wrote about it and what did they think about it? There are a number of different ways in which these questions could be answered. For example, a qualitative discourse based approach would involve collecting as much material from media reports about EP as possible, and then analysing it with respect to sources, authors, audiences and major themes of discussion. An interview based approach could involve interviewing some of the main authors, academics and journalists who had been involved in the controversy. A survey approach could ask media audiences and readers where and when, or even if they had seen evolutionary psychology and look at what they thought about it.

However, evolutionary psychology, while being prominent in certain areas of the media at certain times, was never an immensely popular phenomenon, nor has it become as easily recognisable as, say, genetics. It can be described more accurately as a small part of a much wider discourse in the 1990s about the growing intersection between our understandings of the biological and human worlds. Evolutionary psychology's status as a relatively complex and somewhat obscure set of ideas, discussed in particular areas of the media that had space for it, means that some of the methods described above could be unsuitable. For example, a survey asking audiences about EP could well find that many respondents simply have no idea or recognition of the subject.[1] A purely discourse or interview based approach would lay itself open to criticisms that the findings may simply reflect the concerns of the analyst, or of a quite small group of people, rather than telling us anything about wider social or cultural concerns. An alternative and perhaps more traditional approach would involve collecting quantitative data on the media coverage, looking at how much, when and

[1] I know this well from my own experiences of trying to describe what my PhD work is all about!

where evolutionary psychology was covered in the media. A more complex version of this approach, known as content analysis (e.g. Robson, 1993, ch.10) can additionally engage with what media articles are actually talking about: what authors think about the claims made by evolutionary psychology, and what other kinds of issues get discussed at the same time. However, these quantitative approaches also have many limitations, particularly in getting beyond the basic outlines of media coverage and into the complexities of social, political and rhetorical argument. Furthermore, their potential for addressing issues of motivation, for understanding why media coverage appears as it does, or why particular issues are discussed more than others is severely limited simply by the nature of quantitative data as a series of numbers and statistics.

In order to overcome the shortcomings of each kind of investigative approach, I decided to use a combination of research methods to investigate popular evolutionary psychology, as described in the previous chapter. When starting on my empirical research, it seemed sensible to start with quantitative investigations, not because they are necessarily better, but because they can be used in an exploratory manner to achieve a quick picture of situation to be researched. This basic information about the contours and main themes of EP in the media could then be used to inform other part of the research, for example in constructing interview schedules or coding categories. However, some forms of media are far more amenable to this form of analysis than others, due to the very different ways in which they work. Newspapers appear on a daily basis, use text with still images and are produced quite quickly; television programmes vary in their regularity, use moving images and sound and are usually produced over long periods of time; while books tend to be one-offs, use mostly text and are produced very slowly. These and other factors, such as the volume of material to be analysed and whether archives are publicly available, have to be taken into consideration when deciding whether to do content analysis and what form it should take. Because of their regularity, availability of archives and ease of analysis, newspapers tend to be the media form most frequently analysed in this way.

At the other extreme, content analyses of TV and radio broadcasts are far more time intensive because the kind of information that they carry through audio and visual channels is much more 'dense', complex and difficult to categorise. Evolutionary

psychology has appeared in most mass media forms at some point over the past ten years, but its most consistent presence has (fortunately for me) been in the print media: in broadsheet newspapers and magazines such as *New Scientist*, *Prospect* and the *Economist*. For these pragmatic reasons, I therefore decided to concentrate my quantitative analyses onto newspapers and the other print media, and to use a less systematic and more qualitatively based approach to supplement this work. The qualitative work will include print media coverage alongside evolutionary psychology's appearances in the rest of the mass media, which would include not only television and radio, but also other forms less conventionally included in such analyses like book publishing, public lectures, webpages and email discussions of EP. The crucial feature distinguishing all of these as 'popular' forms of media is that they are open, available and accessible to any interested person, unlike the discussions that take place in professional journals and conferences. However, it is useful to be aware of what is going on in the academic world at the same time as popular discussions of a subject are taking place, and so I have briefly looked at this to try and ascertain the relationships between the two domains for this subject.

In this chapter, I have tried to sketch out a basic picture of popular evolutionary psychology as it appeared in the 1990s UK. To start with, I will go through the different media forms where evolutionary psychology has appeared, describing roughly how important each form has been for EP and the major publications or programmes that have carried it. This will also entail describing the social worlds of each media form, looking at the modes of operation, values and interests that have made them more or less suitable for discussions of evolutionary psychology, and I will draw upon relevant interview material in order to do this. I will then discuss in detail the findings from my two quantitative analyses of UK print media coverage of evolutionary psychology. In order to present these complex findings clearly, I will discuss them together thematically, enabling me to draw out the most important trends, while avoiding repetition. Finally, I will draw these various findings together in order to reach some preliminary conclusions about media coverage of evolutionary psychology. These will then be followed up in greater detail in subsequent chapters, drawing on more of the interview material and qualitative analysis of the media to do so.

4.2 FORMS OF MEDIA AND EVOLUTIONARY PSYCHOLOGY

As I described in Chapter Two, the entity often described as 'the media' is not in fact all that unified, but are actually a loosely connected series of organisations. They have a common goal of communicating news and other information to their audiences, but the ways in which they do this are very variable. Media forms operate with a combination of different modes of communication (text, pictures, audio and moving images), timeframes (constantly updated, daily, weekly, monthly, yearly and one-offs), volume and complexity of information (encyclopaedias to text alerts), and purposes (serious factual information, gossip, entertainment, fiction or creative arts). To fully review what could potentially be included under this definition of media would be a somewhat pointless exercise, so instead the intention here is to review the media forms that have been important for communication of evolutionary psychology in the popular domain. Some of these have been far more important for discussion of EP than others, and I will identify the major publications or programmes where it has appeared. I will then explore the major features of each of these 'social worlds' that have made them more or less suited to the subject.

4.2.1 Television, radio and the internet

An ongoing problem in collecting the material for this research has been where to make the distinction between coverage specifically about evolutionary psychology research, ideas and people, and wider discussions on evolutionary themes, such as about evolution in general, human evolution, palaeontology and archaeology. This problem has been particularly acute in the broadcast media of television and radio, where these subjects become blended together into a more generalised theme of 'origins', or sometimes under 'natural history'. Very often programmes are made about a particular issue, which cuts across many academic disciplines, resulting in a single mention or sideways reference to evolutionary psychology research. In addition there is no way of systematically searching for evolutionary psychology content as I did for newspapers, so my main method of data collection here has been simply to keep my eyes and ears open. I will therefore be discussing only those programmes I have encountered, which have

had a substantial amount of content from EP (whether it is identified as such or not), or have specifically mentioned EP research or researchers.

There has not been that much evolutionary psychology on television, particularly when compared to say, paleoanthropology or primatology. This may be in part because evolutionary psychology is, to paraphrase several of my interviewees, an 'ideas' subject. It does not provide the dramatic visual potential of CGI dinosaurs or ape-men, and cannot be shoehorned easily into a detective style narrative of 'discovery', because it is largely a theoretical subject, and watching too many talking heads, or people filling in survey questionnaires, is less than riveting. In addition, the amount of time or space available for explaining ideas verbally is extremely limited, which consequently limits the space available for science on TV news: only very significant or dramatic 'scientific findings' make it onto everyday news programming. However, evolutionary psychology does have two big things in its favour as far as television is concerned: it is largely about sex and relationships, and it can be fed into programming about evolution or origins, which have been particularly popular in recent years. These advantages have been reflected in the programming on British TV that has featured evolutionary psychology.

There were two main phases of EP on television. Both involved documentary and/or specialist science programming, but the style in which they were produced, channel they appeared on, and key audiences, were all very different. The earlier phase, taking place between 1997 and 2000, was relatively low-key. In 1999, an evolutionary psychology experiment on facial attractiveness (see Chapter Five) appeared on the BBC's science programme *Tomorrow's World*, as part of a series of interactive experiments entitled 'Megalab', run during the UK's National Science Week.[2] The other major appearances of EP on television in this period were all on Channel Four, an independent but non-profitmaking national channel in the UK. All were screened in one of Channel Four's major slots for documentaries at the time, which was weekdays in the middle-late evening, after the watershed. This slot was also frequently lined up with the screening of comedies aimed at younger professional women and couples, such as *Ally McBeal* and *Sex and the City*, and the advertising screened at the time reflected this.

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[2] See, e.g., 'Women reveal their facial attraction' *BBC News Online*, 18th March 1999. http://news.bbc.co.uk/2/hi/sci/tech/specials/set99/298594.stm

In 1997, Channel Four screened *Why Men Don't Iron*, a series of three documentaries about the biological basis of sex differences, while in 1998, there was *Anatomy of Desire*, about the origins of human sexuality. Both of these series also appeared as popular books at the same time.[3] The following (critical) comment, from a journalist who often writes about EP and gender issues, gives something of the flavour of these series.

> It was kind of 'frontiers of science', it was like Horizon. Frontiers of science, these people have discovered[...] they interviewed this rugby playing, huge great guy who was a nurse and they did this test where they sit people down and they ask 'how many synonyms can you think of? How many words?'. Women always get more than men, and if you're a man and you've got more than women normally get, then that means you've got a 'female brain'. Said the bloke, [in 'blokey' voice] "Well, I never realised I had a female brain before, but now I understand, that's probably why I'm a nurse" and at that point I thought, well, we're into joke territory here, this is too silly.
> (Respondent 9 - freelance journalist: interview, 18/01/02)

In 2000, they also screened *Anatomy of Disgust*, about the causes of the emotion of disgust. Both *Anatomy of Desire* and *Disgust* actually included evolutionary psychology alongside a number of other perspectives, such as social psychology, psychiatry and anthropology.[4]

The second phase of evolutionary psychology on TV was somewhat different, and occurred after the year 2000. *The Human Face* was screened by the BBC in 2001 in a primetime slot: midweek at 9pm on BBC One, a time frequently used for other prominent, big budget BBC factual series such as *Walking with Dinosaurs* (2000). It was co-produced by UK psychologist Brian Bates and the comedian John Cleese, and was presented by Cleese and the actress Elizabeth Hurley, with a fairly light, comedic exploration of the psychology of faces, including that of beauty (which is where EP came in: see further discussions in Chapter Five). As often happens with BBC science series, it was accompanied by a 'coffee table' style book (Bates and Cleese, 2001), and was also shown by the US cable channel The Learning Channel in 2001.[5] Evolutionary psychology also appeared on the BBC in 2002 in the form of *Human Instinct*, screened in

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[3] For *Why Men Don't Iron*, see http://www.frif.com/new99/whymen.html, as well as Anne and Bill Moir (1998) *Why Men Don't Iron: the real science of gender studies.* See also Simon Andreae (1998) *Anatomy of Desire: the science and psychology of sex, love and marriage.*

[4] See http://www.channel4.com/culture/microsites/A/anatomy_disgust/

[5] More info on the series can be seen on The Learning Channel's website http://tlc.discovery.com/convergence/humanface/humanface.html

the same timeslot. It was written and presented by one of the UK's most visible scientists at present, fertility expert Lord Robert Winston, presenter of a fair amount of the BBC's science output over the early part of the decade. *Human Instinct* explored 'survival instincts', ' sexual instincts', 'competitive instincts', and 'heroic, altruistic instincts', covering many evolutionary psychology claims about the evolutionary origins of behaviour. Its overall theme was that of the evolutionary psychology slogan, 'Stone Age minds in a space age world', discussed further in Chapter Seven, and was presented somewhat in the style of that previous doyen of evolutionary TV, Desmond Morris. Interestingly, this programme presented these claims as much more certain than other programmes had, and not in the context of other approaches to the area. The choice of the term 'instinct', one which evolutionary psychologists themselves have largely avoided, reflects this move towards simple stories and certain knowledge claims.[6] This second phase occurred alongside a drop off in EP coverage in the print media, discussed below, and perhaps a move into mainstream consciousness. However, none of the television coverage actually referred to evolutionary psychology by name, reflecting the tendency of the subject to be more identifiable through its knowledge claims and actors than the label it uses.

The major site for evolutionary psychology on the radio was, perhaps unsurprisingly, the major site for factual radio programming, BBC Radio 4, although it occasionally popped up 'in conversation' on the BBC's news and sport commentary channel, FiveLive. It was Radio 4 where evolutionary psychology really came into its own, with a number of one off documentary programmes about a wide range of subjects featuring evolutionary psychologists from time to time.[7] EP would also feature in Radio Four's regular factual programmes such as *Woman's Hour* and *All in the Mind.*

> [In] this unit we produce programmes for radio 4, but there are also a number of evolutionary psychologists, or one in particular, [...] who is a good speaker, good media person, knows people high up in the media establishment, and has very interesting things to say, and they appear on non-science programmes. I'm a journalist, I'm a science journalist, I'm a radio journalist and I know how it works, if you find someone who is good and can be relied to produce interesting output, you go back to them. (Respondent 14 - radio producer, science broadcaster: interview, 15/07/99)

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[6] See the BBC site http://www.bbc.co.uk/science/humanbody/tv/humaninstinct/index.shtml for further information on the series. There was also an accompanying coffee table book, see Winston (2002)

[7] A relatively recent example might be a programme about the emotions, Primitive Streaks, broadcast in July/August 2002, see http://www.bbc.co.uk/radio4/science/primitivestreaks.shtml.

However, the most prominent appearances were in live discussion programmes such as *Start the Week*, which would often feature academics, authors or other experts, discussing their own and each other's ideas, or debating a specific topic. In particular, the arts broadcaster and commentator, and host of *Start The Week* through the early and mid-1990s, Melvyn Bragg became very interested and enthusiastic about science around this time, picking up upon the boom in 'popular science', which I will return to later.[8] This was confirmed by one of my informants, who worked as a publicist for popular science publishing at the time.

> But the other definition of popular science is that same level of coverage and that same level of science communication which is mirrored through radio and less precisely through television in so far as the radio covers it in much greater depth and much greater frequency. Melvyn Bragg made science a central part of the Radio 4 diet, when he ran *Start The Week*, through the early 90s.
> (Respondent 11 - popular science publishing PR: interview, 28/07/01)

As such, Bragg frequently invited scientists onto his show, and evolutionary psychologists and other Darwinians benefited from the association. The format was very successful for evolutionary psychology, largely because the controversial nature of the subject meant that it was fairly easy to find academics who would disagree about the issues, which makes for lively radio discussion. Sometimes these encounters got quite acrimonious, as when feminist Germaine Greer and evolutionary psychologist Helena Cronin debated gender issues on Melvyn Bragg's discussion programme *In Our Time* in January 1999. This kind of dramatic controversy also helped fuel coverage in other media forms, especially the press, which in turn helped to raise the profile of evolutionary psychologists.

As popular coverage of evolutionary psychology developed over the 1990s, a major development was occurring in the world of the media, as the whole concept of the Internet as a media form in its own right came into a wider public consciousness. As can be seen simply from the previous few pages of discussion, the interlinking of traditional media forms with some kind of web presence is now (in 2003) almost mandatory in the UK media. This has been strongly led by the movement of the BBC

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[8] In 1998, Bragg published a laudatory popular history of science, based upon his radio discussions with scientists (see Bragg, 1998).

into online news (http://news.bbc.co.uk/) and other activities in its BBCi venture (http://www.bbc.co.uk/). By now, almost all UK media organisations maintain a website of some sort, while a few have strongly specialised in online news provision (e.g. *The Guardian*, http://www.guardian.co.uk/). At the time of writing, the search engine Google (http://www.google.co.uk/) currently yields about 275,000 hits and a special directory entry for the subject.[9] However, during the mid and late 1990s, all of this was developing, and at the time the 'dotcom' boom was promulgating the idea of the Internet as an entirely new – and separate thing, so most EP coverage in the media was not linked to the web.

There were a few crucial exceptions to this, which were important for evolutionary psychology. Academic institutions were using the Internet far in advance of the mainstream media, and are still over-represented there, so academic groups working on the subject, such as California's UCSB (Cosmides and Tooby's home institution) have maintained important websites for evolutionary psychology.[10] An exception to this would be *Evolution's Voyage* (http://www.evoyage.com/), an American site describing itself as 'Evolutionary Psychology for the Common Person'. The site has been running since 1995, and is the work of one William A. Spriggs, who describes himself as a 'blue collar worker' and independent scholar, and contains a large number of essays themed around evolutionary psychology by Spriggs and others. A final, and important presence of EP on the Internet is an email discussion list, which has been running since June 1999 and is currently hosted by Yahoo (http://groups.yahoo.com/group/evolutionary-psychology/). The group currently has 3423 members, comprised largely of academics, but also including journalists, students and interested 'lay people'. It is run by Ian Pitchford, now a postdoc in neuroscience and psychopathology in the US, who was a PhD student at the University of Sheffield during the late 1990s.[11] As well as being a discussion list, Pitchford gathers information on EP, including news of new research findings and media coverage, and posts it to the mailing list (providing me with a major source of material for analysis). Since 2001, he has also posted this material to a website, *News in Behavioural and Brain Sciences* http://human-nature.com/nibbs/, and has co-edited (with

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[9] On its own, this figure is fairly meaningless, but by way of a comparison, 'sociobiology' and 'behavioural ecology' yield about 60,000 hits each, while 'evolutionary biology' gets 616,000 hits.

[10] See http://www.psych.ucsb.edu/research/cep/; also the site for the Human Behaviour and Evolution Society http://www.hbes.com/.

Sheffield academic Robert M. Young) a book review site *Human Nature Review* http://human-nature.com/.

4.2.2 Book publishing

Although often not thought of as being part of the 'mass media', book publishing has been central to the communication and discussion of evolutionary psychology ideas. The first usage of 'evolutionary psychology' in the UK media was in articles associated with the publication of a book, *The Moral Animal* (1994), by the American science writer Robert Wright. From the early 1990s to 2001, there was something in the region of 25 books published on evolutionary psychology or closely related themes.[12] In the past, there was much less of a division between so-called 'popular' and 'technical' writing about science, with (for example) Darwin's *Origin of Species* being a long book written for and read by other 'learned men' and an educated 'lay' public. As science became increasingly professionalised and institutionalised in the 20th century divisions opened up between popular and technical scientific writing. It became more normal for most scientists to only communicate with one another in technical journals while a few, usually senior, 'visible scientists' (Goodell, 1977) wrote books specifically intended for a lay public. This kind of discussion has frequently been important in studies of evolution, not only with Darwin, but also during the sociobiology controversy, which kicked off by the publication of two (at least semi) popular books in the mid 1970s – E.O. Wilson's *Sociobiology* (1975) and Richard Dawkins' *The Selfish Gene* (1976).

However, during the late 1980s and 1990s something happened to make popular science into a much, much 'bigger' thing than it had been for many years, as described here by a publishing editor working in the area.

> When Stephen Hawking's *A Brief History of Time* first appeared (in 1988) anyone familiar with Weinberg's book [Steven Weinberg's *The First Three Minutes* (1977)] would probably have felt reasonably safe in predicting a modest sales performance at least: like the earlier book: it had a wonderful title, a straightforward writing style, and an author who was a leading light in the field. (Rodgers, 1992; p231)

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[11] For more information on the list, see Andrew Brown, 'Flameproof racism', *Salon*, August 30th 2000.
[12] It would be very difficult to give a more accurate estimate because of the problems in defining what can count as an 'evolutionary psychology' book.

What happened instead was that Stephen Hawking's popular physics book *A Brief History of Time* (1988) went on to become probably the best selling popular science book of all time, taking its publishers entirely by surprise and propelling the author to fame and iconic status. Although the subsequent boom in popular science publishing cannot be ascribed solely to this phenomenon, with scientific institutions, scientists, publishers and literary agents such as John Brockman[13] all playing their part, it is certainly true that after this many more popular books were published, prominently marketed and became bestsellers. The Aventis (formally Rhone-Poulenc) prize for science books has now been for some years a high profile event coveted by authors and publishers and widely covered in the rest of the media. This prize was set up in 1989, the year after the publication of Hawking's book, as was the Edinburgh International Science Festival, where many popular authors give talks about their work.

An underlying reason for this boom actually lies in the modes of practice and operation of the publishing business itself. Even in today's publishing industry, where most publishers have now become subsidiaries of huge multinational media corporations, publishing does not operate in a directly commercially motivated way. As well as aiming to ultimately make a profit, publishers are also motivated by other non-commercial concerns, more to do with producing contributions of value to cultural life.

> My job is to publish what I think is interesting, stimulating and will create a response and a market, you know it's not entirely straightforwardly market driven because, you know, my colleagues who do thrillers and chick-lit and so on are much more straightforwardly market driven. Like anybody working on the more serious side of publishing, I want my authors to win prizes and get great reviews and I'm perfectly happy to do books that aren't going to sell very many copies. As long as some of my books are selling enough copies to pay the overheads that are devoted to our department, and justify my salary and so on, but it's not every book has to make because there's, well Thomas Harris is one of my authors, wearing my fiction hat - he pays for a lot of things! And every publishing company works on this basis, of a kind of internal cross-subsidy, it's always been the nature of the business. But nobody wants to publish a book that gets no reviews and no sales, because then what's the point, if you only sell to six hundred people, it's not the money you get, it's that you haven't influenced anyone very much.
> (Respondent 13 - nonfiction publishing editor: interview, 22/01/02)

[13] Brockman represents many of the most famous and successful 'popular science' academic authors, including Richard Dawkins and Steven Rose. He is particularly famous for securing some very large (six figure) advances from publishers for popular science books (see, St John, 1999).

This attitude seems to be rooted in an understanding in the industry that it is very difficult or even impossible to know how or why some books sell and others don't.

> One of the reasons [that it's difficult to know] is that book publishing is not a rigorous industry in its analysis of its market, in the way that I'm sure soap sellers know a lot about their market. One of the differences of course is that every book is different whereas every bar of soap is the same.
> (Respondent 11 - popular science publishing PR: interview, 28/07/01)

> This is kind of rather an old story now, but it was relatively new when I was first in publishing, which was when I first heard it. If you'd taken 100 hundred people off the street, twenty-five years ago, and said, "do you think you might be in the market for potentially buying and epic novel about bunny rabbits?" most of those people would say, "no." But actually *Watership Down* was read, when subsequently published, by quite a number of those people. Now that's a slightly, kind of silly answer, but how *do* you do market research except by sitting lots of people down and getting them to read the book?
> (Respondent 13 - nonfiction publishing editor: interview, 22/01/02)

Instead, to paraphrase my informants, publishers rely heavily upon 'word of mouth' to publicise new books and have a 'feeling' for how well books will do based upon 'the buzz that builds or doesn't about a book'. This means that publishing is very subject to trends, whereby the unexpected success of a book will lead to many more books in a similar vein being published, and selling well for a time. Recent examples of this could be the aforementioned 'chick-lit', based upon Helen Fielding's *Bridget Jones's Diary* (1996), or popular science history, after the success of Dava Sobel's *Longitude* (1996). During the mid and late 1990s, there was a similar trend for biological, evolutionary and 'brain' books, which evolutionary psychology fitted neatly into and strongly benefited from, as described here by one of my informants, a freelance journalist

> I think that the thinking in journalism is very much the same as that feller [he had spoken to] from Faber & Faber, which is, "My god, something exciting's happening in science, this stuff about genetics, that sort of science, the Genome Project, and Richard Dawkins sells a lot of books, and we ought to be up to speed with this."
> (Respondent 9 - freelance journalist: interview, 18/01/02)

This tendency for trends in publishing also means that trends will fade away, and when I spoke to this publisher in early 2002, they felt that this was happening with evolutionary psychology.

> I think, I'm talking very much as a publisher here, [...] I do think from a publishing point of view we are kind of running out of... that evolutionary psychology as a subject is fading. I think partly because there's been a backlash, and you know how the press works, they love to frontlash and then backlash. [...] I think a lot of the 'big' things to

be said about evolutionary psychology have been said, and the press is less sympathetic, and... It's partly the literary editors, they will give space to stuff if they think it's new, as soon as you're saying, "well this book is like, three, four other books" you're less likely to get the reviews.
(Respondent 13 - nonfiction publishing editor: interview, 22/01/02)

4.2.3 Public lectures and debates

Simultaneously with the boom in popular science, and dovetailing neatly with the radio appearances, there was an increase in events where scientists gave talks, lectures, or engaged in debates with each other in front of public audiences. Such activities are, of course, nothing new, and public lectures have been held by organisations such as the Royal Institution and British Association since the 19th century. However, such public events achieved a new frequency and popularity in the 1990s, with the Edinburgh International Science Festival and many other smaller events taking place over this time, with very high levels of public attendance and interest. Often these were run more along the lines of a literary festival, with speakers often being authors, perhaps publishing a book at the time, and sometimes available to give book signings. Evolutionary psychologists and their opponents participated fully in this movement, which was also facilitated by a very high profile lecture series set up and run by a group of academics located at the London School of Economics. Darwin@LSE, as it named itself, was something between an academic research group, an organisation like the BA, devoted to 'the public understanding of science', and a PR operation, working on behalf of the particular scientific viewpoint of evolutionary psychology. It consisted of a very small group of academics, authors and students and was organised by the philosopher and historian of science, and committed evolutionary psychologist, Helena Cronin.[14]

From 1995 to 1998, the Darwin@LSE programme ran several series of high profile public lectures on the broad theme of 'Darwinism', while its members engaged in many 'popular science' activities, such as writing books and articles and letters in the print media, giving interviews and public lectures and debates. The programme also produced its own series of small popular science books, *Darwinism Today*, published by Weidenfeld and Nicholson.

[14] See their website http://www.lse.ac.uk/Depts/cpnss/darwin/index.htm for further details.

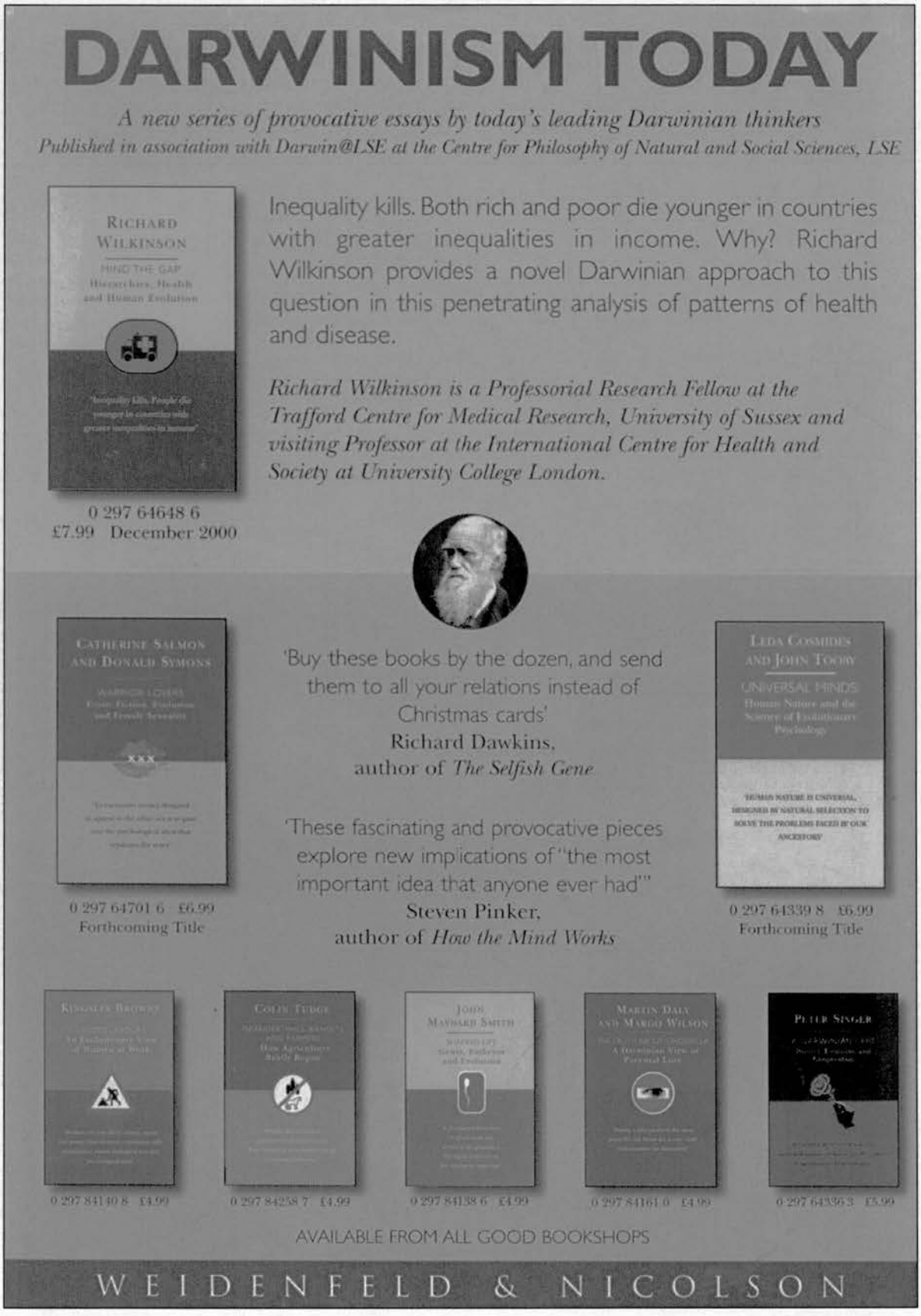


Fig. 1: Publicity material for the 'Darwinism Today' series of books

Over this time, many prominent 'evolutionary psychology' and 'Darwinian' books were published, starting with Wright's, but also including books by Steven Pinker, Robin Dunbar, Matt Ridley, and Darwin@LSE 's own *Darwinism Today* series of small books. The lectures were given by a broad spectrum of academics with interests in Darwinism, including very well-regarded figures such as John Maynard Smith FRS (03/04/95; 8/05/96; 8/10/98), as well as many of the 'core' evolutionary psychologists such as Leda Cosmides (3/05/95).

> It worked very well, because Helena Cronin's a brilliant organiser! And it became the focus, both of bringing together people who had been working disparately, and a focus for bringing to the attention of the public. In many ways, what was the most important aspect of Darwin@LSE was that it transformed EP from being a fairly backwater science, or discipline, or approach, to something at the forefront of the public mind. In '96, '97 it was one of the hottest tickets to have, you go there and you find everybody from John Maynard Smith to Jonathan Miller to Ian McEwan to Melvyn Bragg. So yes, in terms of bringing it to public consciousness, or I suppose more importantly of bringing it to the consciousness of the media and of policy makers I think it was crucially important.
> (Respondent 12 - author, freelance science journalist: interview 02/10/01)

Many of the authors of popular EP/Darwinian books published over the period also spoke at Darwin seminars, including Steven Pinker (10/04/95; 22/01/98;), Matt Ridley (27/04/95; 7/11/96;), and Marek Kohn (19/11/97).[15] This was of course of great benefit to both publishers and authors, and was widely covered by the other media.

> I mean, kind of impacting on publishing but not directly about publishing, the influence of Helena Cronin and her set up at the LSE has been absolutely enormous. I mean, it's very useful to a variety of publishers, including me, in giving a fantastic opportunity to have kind of public lecture with a real... not only substantial, but also very interesting audiences. I remember going to those at the very beginning when there'd be, you know, about twelve people there and I'd be the only person who wasn't an academic, and the spaces grew and grew as we were, till Helena was using the largest lecture theatre in the LSE, and there'd be all sorts of TV people there, and so on, and journalists would actually come along and write up what was going on.
> (Respondent 13 - nonfiction publishing editor: interview, 22/01/02)

[15] Dates all sourced from Darwin@LSE's own publicity material.

4.2.4 Newspapers and other print media

Far and away the most important media for discussion of evolutionary psychology has been the print media: newspapers, magazines and everything in between, from the *Financial Times* through to *Just Seventeen*. However, this coverage was not uniformly spread over all these locations, but was in fact concentrated into the upmarket end of the print media. This has been in broadsheet newspapers, rather than tabloids,[16] news journals such as *Prospect*, the *Economist* and *New Statesman*, and crossover 'professional' and popular science magazines such as the *Times Higher Educational Supplement* and *New Scientist*.

> Yes, it's broadsheet. I have to say that to date the tabloid coverage has been pretty poor. It really doesn't help, whether this is elitist or not, one wants to see as wide a range of people as possible engaging with the issues, but I think a full range of people already read these books without having them dumbed down, and on the whole the tabloids do that. I don't think we need the tabloid coverage to maintain an intelligent level of interest in the subjects.
> (Respondent 11 - popular science publishing PR: interview, 28/07/01)

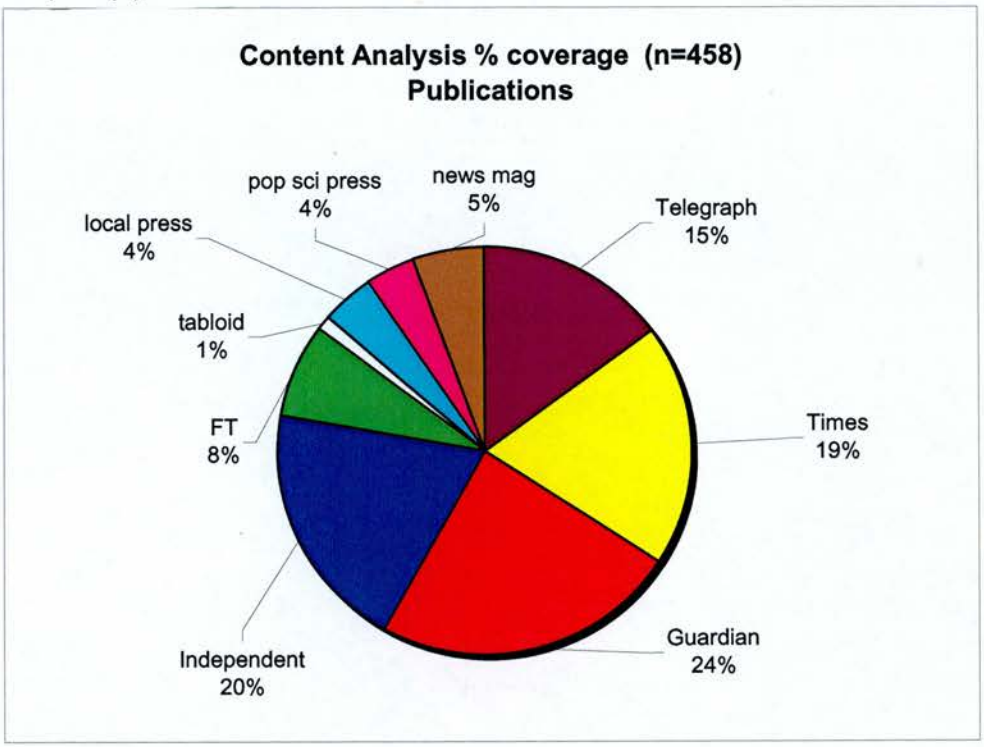
This can also be seen from Graphs I (a) and (b), which show the quantitative findings for publication sources of the evolutionary psychology coverage I collected. The content analysis shows the broadsheet press dominating this coverage, with smaller contributions from news magazines, popular science magazines and 'local' newspapers (as in the *Scotsman* and *Evening Standard*). It also suggests that evolutionary psychology was covered more by the centre-left press than the centre-right, a suggestion confirmed by the broadsheet CD-ROM findings.

[16] Although the tabloid press is much more difficult to survey retrospectively due to the lack of the computerised archiving used by the broadsheets.

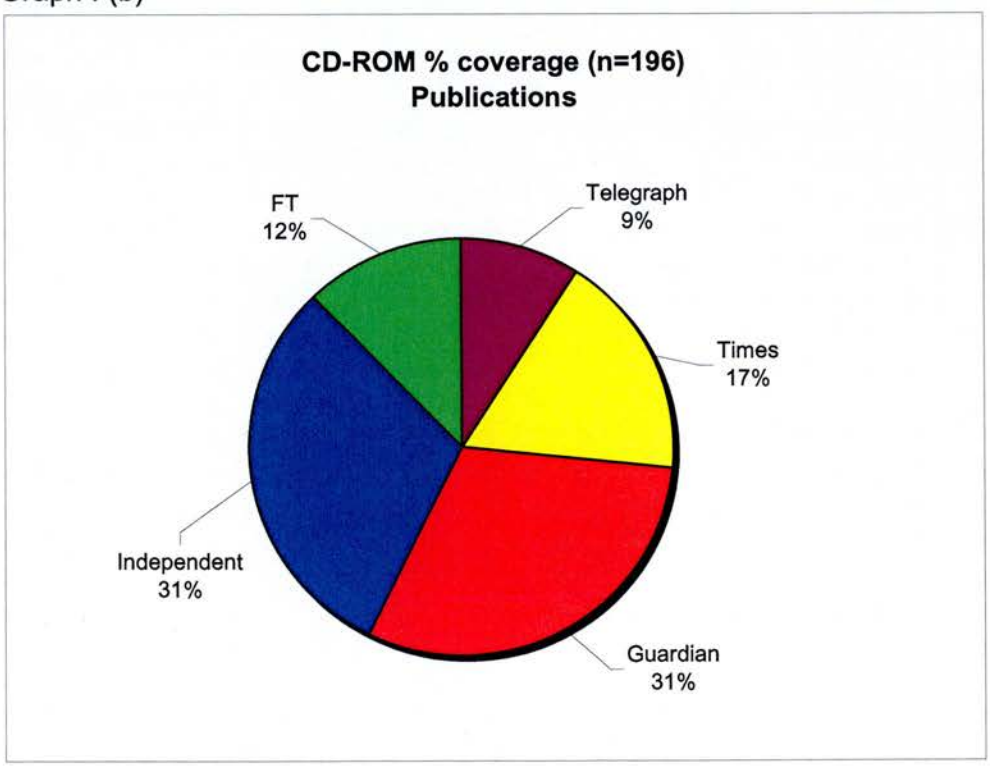
4.2 FORMS OF MEDIA AND EVOLUTIONARY PSYCHOLOGY

4.2.4 Newspapers and other print media

Graph I (a)



Graph I (b)



Because of this dominance of the print media in the media coverage of evolutionary psychology, as well as for the pragmatic reasons explained in Chapter Three, I have looked at it in much greater depth than the other media forms. This will be explored through my discussions of the other quantitative findings, to be discussed later in this chapter, and also in the qualitative work discussed in Chapters Five, Six and Seven. To an extent, this in depth work will also be taken to stand for the treatment of EP in the other media, as is occasionally done in other studies of science in the media (see Bauer et al, 1995).

4.2.5 Interactions amongst the media

> If it's a big book, you will get book proofs [...] ideally five to six months ahead, and those will go to magazines and you will try and pin down the cornerstones of your campaign, like serialisation, colour magazines and big interviews. [...] Plus, you're getting out a sort of word of mouth campaign, so you send it to major reviewers and readers, who you them to start reading it and talking about it, and you probably have anywhere between fifty and one hundred people to contact. [...] And really once you've got, with that proof you can do a lot of work with the proofs, you can get the cornerstones on radio and TV [...]. And then the books come in, preferably six weeks ahead and by then, you've read the book, you've done the general press release, stating what is at the heart of the book, what is new, what their idea is, why their work is important, what their take is on their subject, and what is specifically new, either to them or to the genre, to the area of science. You're basically then looking at the book, taking a million notes, finding as many angles as you can, really of people who would like to review it and why, and of how many 'science' stories you can squeeze out of it for the science pages, how many 'social' stories can be spun off, implications of the science into the other pages beyond the science pages, features, arts, finance, business, columns, news, a day in the life of, if you have a strange life, personal details can be of interest, you use every angle you can, think it through and ideally you sell each angle to a different spot, so really maximising your coverage as far as possible.
> (Respondent 11 - popular science publishing PR: interview, 28/07/01)

I have quoted this respondent at length because I feel it gives such a good flavour of how the media forms described in this chapter can co-operate extremely closely on a routine basis. Stories will circulate from one publication to another, and at its most extreme, the actions of one part of the media can become the story in and of itself. One of the most routinised examples of this must be in the promotion of new books by publishers, which is the process being described here. Such processes are a classic example of the way in which social worlds co-operate and mutually enrol one another to their interests, because while the publisher gets publicity about their books, the other media are provided with a ready, reliable and frequently interesting source of material to

write about. This is particularly important in the case of the broadsheet press, who are under intense competition for readers, and have also hugely increased the amount of space in them to be filled.

> The influence of books is much greater than it might seem, because the media do use us as a source of content, [...]. But it's like, you see celebrities being interviewed by Parkinson, or being on *The Big Breakfast*. Time and time again, why are they there? They're there to promote their new book or their new movie or whatever it is, obviously I'm not remotely suggesting we're the only source of this, but books feed into the whole, partly of course because the writers of book want the media coverage, and that's what we want too, to happen to them when a book is being published [...]. The *number* of people who will have read of this in newspaper articles, who will never have read the books and never will.
> (Respondent 13 - nonfiction publishing editor: interview, 22/01/02)

It is therefore easy to see how the Darwin@LSE programme was able to feed into these co-operative routines to the benefit of all concerned, while in the process achieving very high levels of exposure for the ideas and identity of evolutionary psychology. I will now move on to discuss in more detail the findings of my two quantitative analyses of the print media coverage, and will give some preliminary interpretations of these findings.

4.3 PRINT MEDIA COVERAGE DURING THE 1990s

4.3.1 Levels of discussion of evolutionary psychology

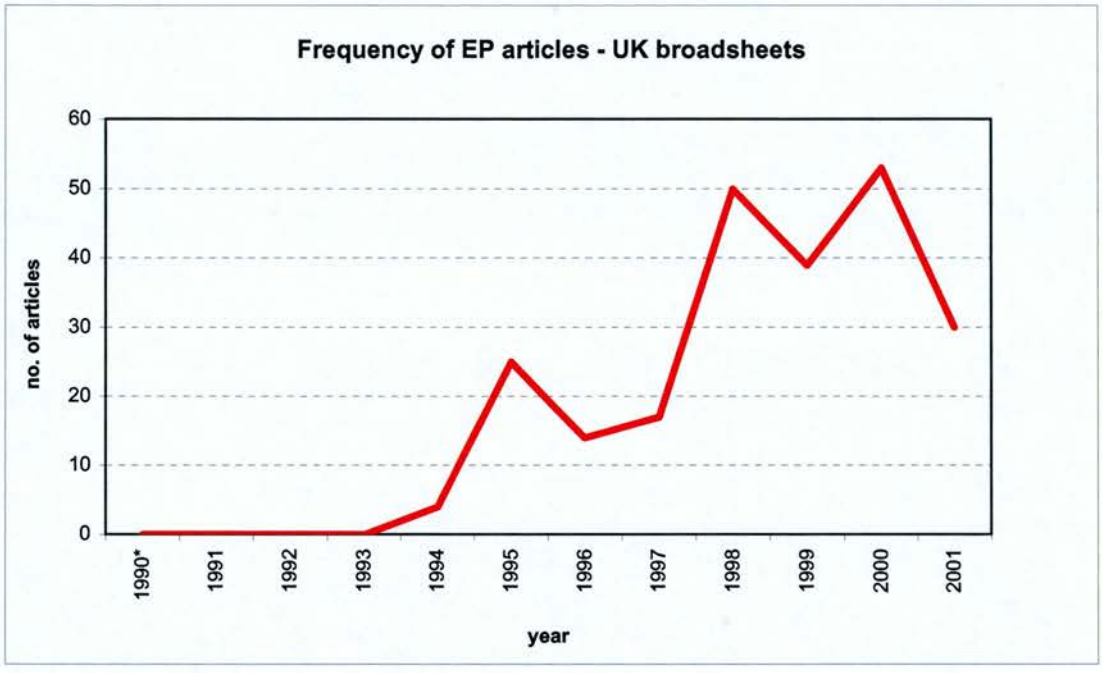
Graph II (a) illustrates the frequency of the UK broadsheet press coverage of evolutionary psychology through the 1990s, as found from CD-ROM searches for the phrase. It clearly illustrates the changes over time in coverage of the subject, with no occurrences at all before 1994 and three peaks in coverage in the years 1995, 1998 and 2000. Usage of the phrase built slowly at first, reaching plateaux after each peak, not being extensively discussed until after 1998 and then dropping off again after the year 2000. This drop cannot be confirmed as a long term trend as it is too recent, but my impression from watching the media is that coverage of evolutionary psychology has indeed subsided since 2000, a suggestion perhaps confirmed by the publisher's comments in section 4.2.2. In order to get some idea about the relationship between mass media and academic discussions of evolutionary psychology, I have plotted the

UK press coverage against citation rates from some major bibliographic databases, *Psychinfo*, *IBSS* and *Web of Science*. Graph II (b) shows quite clearly that levels of discussion in academia and the media largely mirrored each other through most of the 1990s. Importantly, citations for evolutionary psychology started to rise sharply after the first media discussions in 1994. Another interesting feature is that while discussion levels in the media fell in 2001, the citations continued to rise, and in the case of the psychology database, *Psychinfo*, were rising dramatically from 1998. Of course, there is no way of telling if the journal articles causing these citations were positive or negative about EP, but to an extent this matters less than the fact that the subject was being discussed and the label recognised.

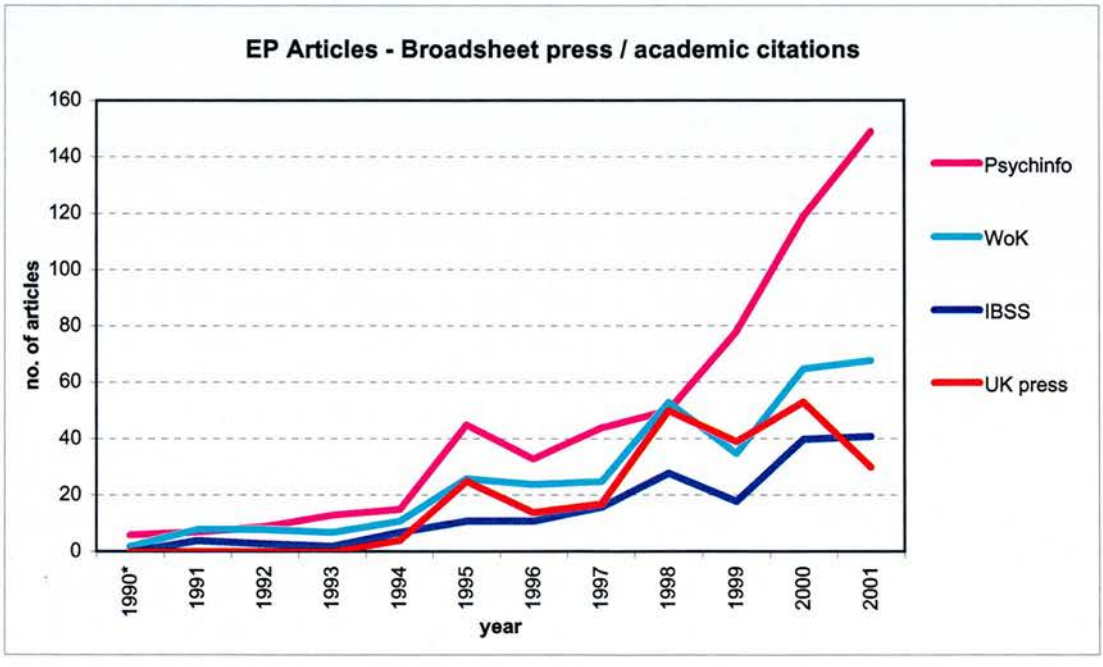
4.3 FREQUENCIES OF COVERAGE DURING THE 1990s

4.3.1 Levels of discussion of evolutionary psychology

Graph II (a)



Graph II (b)



4.3.2 Discussion of related subjects

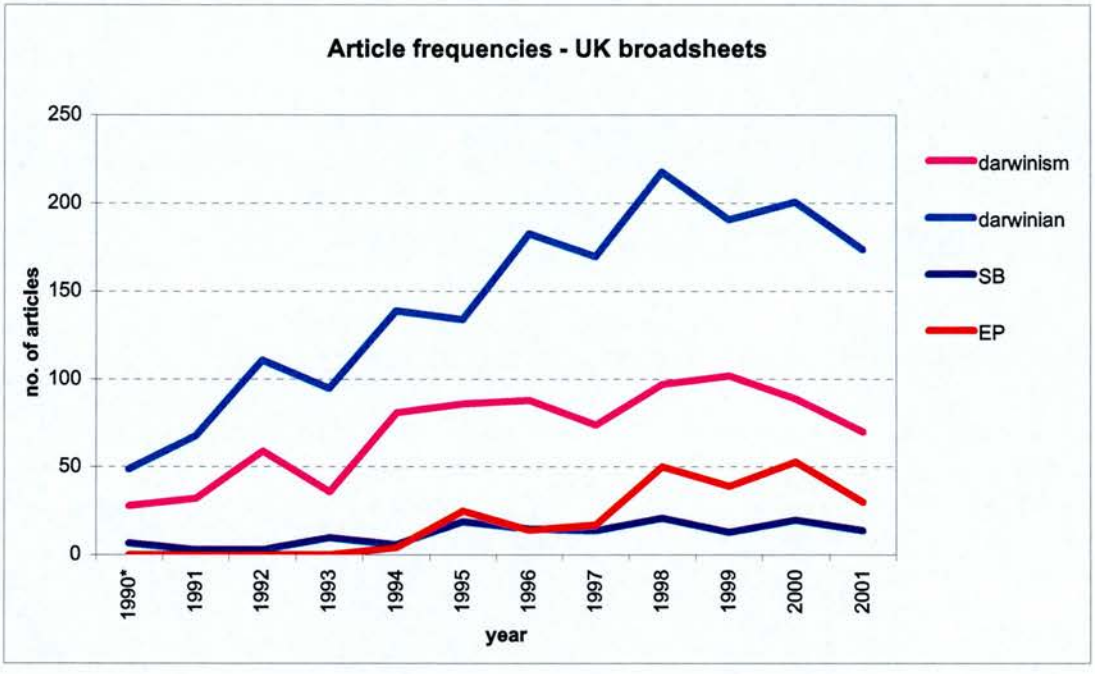
In order to put the frequencies found for evolutionary psychology into context, I have compared them with some other terms, some very closely associated with the subject, others more loosely. Graph iii (a) shows coverage of evolutionary psychology alongside that of the subject that preceded it, 'sociobiology' and the broader terms 'Darwinian' and 'Darwinism'. This shows that sociobiology was being discussed at low, but consistent levels before the term 'evolutionary psychology' entered the public domain. Interestingly, the new label does not seem to supersede the old one, but instead prompts a general increase in discussions of sociobiology as well. The broad trends for EP coverage are reflected in those for 'Darwinian' and 'Darwinism' as well, increasing in line with it and peaking in 2000 before going down. The higher levels of both of these reflect their usage in other contexts, not only in terms of discussion of other parts of evolutionary biology than evolutionary psychology, but also in other contexts.

These other usages reflect wider cultural concerns in interesting ways: 'Darwinian' is often used in business and financial reporting, while I found that 'Darwinism' was most frequently mentioned in the context of 'Social Darwinism'. Graph IIi (b) then puts these frequencies into a context of wider levels of press articles published each year, by comparing it with two EP related words in use in general language: 'evolved' and 'genetic'. This illustrates quite graphically how very small the overall levels of discussion about evolutionary psychology actually were, as well as how easily any curve can be made to look flat by changing the scale! Again, the wider trend of consistent increase over the 1990s, followed by a drop can be seen, with the drop-off in usage of 'genetic' being particularly sharp. The fact that all of these terms drop in 2001 suggests that the fall in evolutionary psychology coverage is real and may be part of a wider trend.

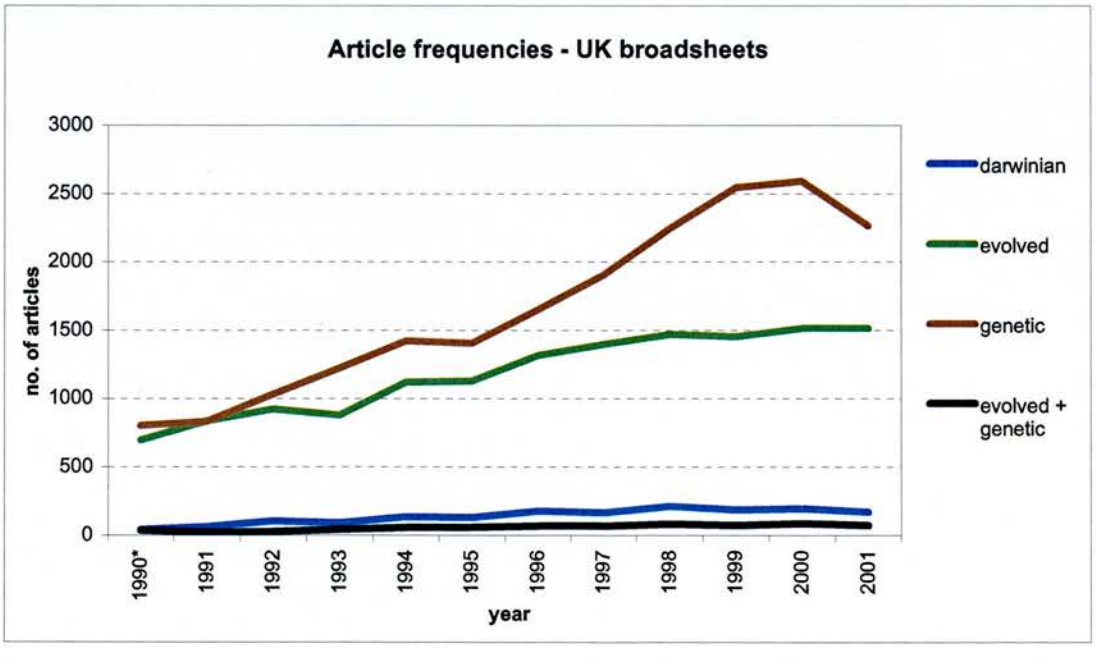
4.3 FREQUENCIES OF COVERAGE DURING THE 1990s

4.3.2 Discussions of related subjects

Graph III (a)



Graph III (b)



4.4 THE PRESS AND POPULAR SCIENCE BOOKS

From a very early stage in the research, it was apparent that there was a strong link between press coverage and discussion of evolutionary psychology and the publication of popular science books on the subject. I have already established that such links between publishing and the press are well established and routinised, and I have also shown how the Darwin@LSE programme utilised these routines to obtain publicity for their lecture series, and coverage of evolutionary psychology in the process. However, I have yet to establish any more direct links between the two, and to an extent it would be very difficult to do this without the reader having direct access to my sample of media coverage. However, the CD-ROM databases have meant that I can compare EP coverage levels over time with that of popular science authors in the area.

I did this with a range of these authors, plotting the frequencies of articles mentioning EP against those mentioning the author to see if peaks in coverage of the two any of them seemed to correlate. Based upon this, and on my familiarity of the content of the media coverage of EP, I selected the most likely candidates and plotted the frequencies on a monthly basis around the coverage peaks. Because of the way these data were collected, it is not possible to carry out a full statistical analysis of correlation, and I must instead rely on visual inspection through plotting graphs.[17] Although this method can only suggest links between book publications and press coverage, my interpretations of these data are backed up by my knowledge of the content of media reports about evolutionary psychology, as well as some feedback gained during the research interviews.

4.4.1 1994 – 1995: Robert Wright

Graph IV (a) shows EP coverage frequencies alongside those for author Robert Wright. On close examination, the first press articles about evolutionary psychology in

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[17] This is because the measures are not independent, meaning that at a given time, database 'hits' for 'evolutionary psychology', 'Steven Pinker' and 'Steven Rose', for example, could be from a single article, or could be three separate articles. The way that I have collected my data means that it is impossible to tell the difference.

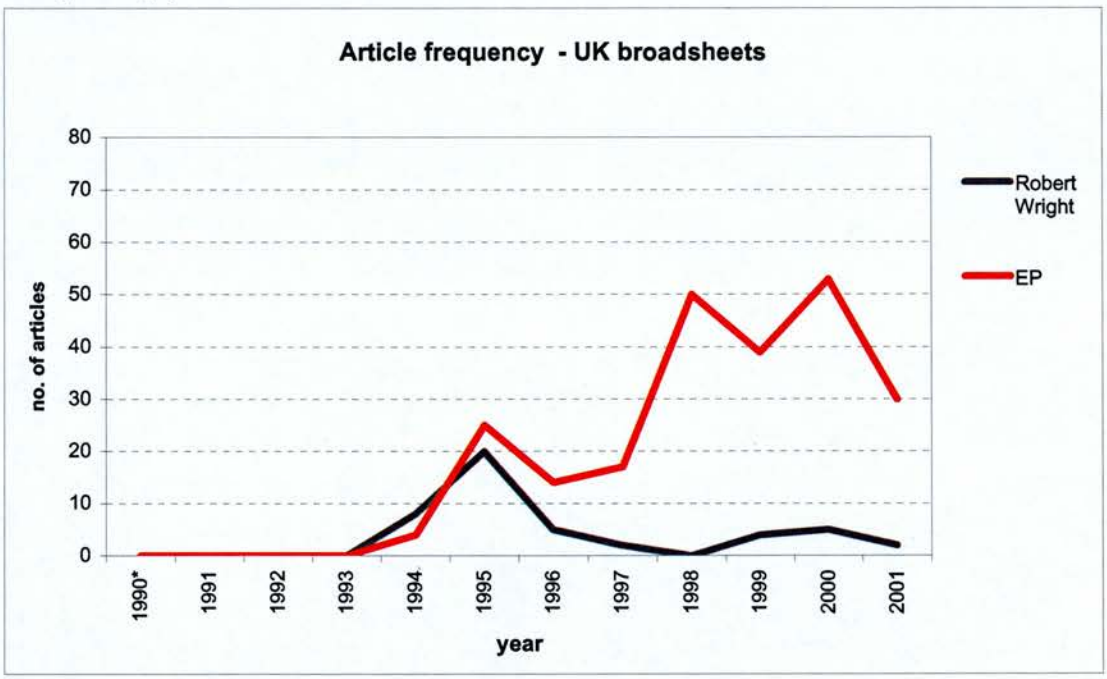
1994 and 1995 were all also about Wright's 1994 book *The Moral Animal*, sometimes subtitled *The New Science of Evolutionary Psychology*. Robert Wright is an American science writer who at the time (and now) largely worked for the American centre-left news journal *New Republic*. He has published books in 1995 and again in the year 2000, just where the peaks for his coverage are. However, it can be seen that while coverage for both Wright and EP peak in 1995, during the 2000 peak for EP, coverage of Wright merely twitches. Moreover, the book published in 2000 was on an evolutionary theme, but was not specifically about EP,[18] while the 1995 book was most definitely associated with evolutionary psychology. Graph IV (b) breaks down the data for 1994 and 1995 on a monthly basis, and it now becomes clear that the two terms are associated: when EP peaks, Wright peaks and *vice versa*. This happened in August 1994 (the book was published in the USA in September 1994), then again in April and May 1995 (the UK publication was April), and again in July 1995.

[18] Wright, R (2000) *Nonzero: The Logic of Human Destiny*. The book attempted to reclaim earlier progressivist narratives of human evolution as valid and relevant today.

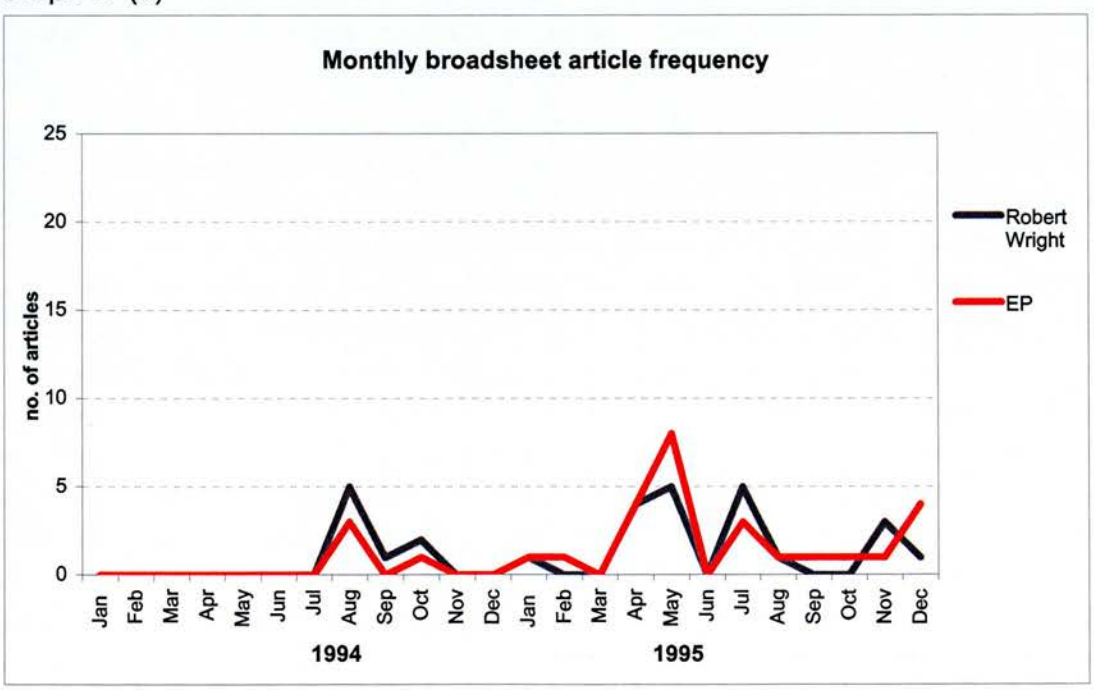
4.4 THE PRESS AND POPULAR SCIENCE

4.4.1 1994 – 1995: Robert Wright

Graph IV (a)



Graph IV (b)



4.4.2 1998 – 1999: Steven Pinker

Having established a methodology for examining links between book publications and media coverage of EP, I will now try it with some of the other popular evolutionary psychology authors. Graph V (a) shows EP coverage frequencies alongside those for the author Steven Pinker. Pinker is also American, but is a cognitive and linguistic psychology professor, currently located at Harvard University. He is the author of four popular books, published in 1994, 1998, 1999 and 2002. The 1994 book was titled *The Language Instinct*, and advanced the argument that our facility for language is an innate, evolved feature of human beings. *The Language Instinct* is evolutionary in its approach and does mention it by name towards the end of the book. However, in my experience, public discussion of the book did not pick up on this association. This is reflected in the press coverage at that time: coverage of Pinker initially peaked in 1994, while that of EP peaked in 1995.

In 1998, Steven Pinker's second book, *How the Mind Works* was published.[19] This book was a 'full frontal' argument for the evolutionary psychology approach to studying the human mind and was explicitly identified as such in much of the press coverage about the book. This can be seen reflected in Graph V (a): coverage of both EP and Steven Pinker climb steeply from 1997 to 1998, and then drop again in 1999. Graph V (b) shows the period from June 1997 to June 1999 on a month by month basis, and yet again the frequencies of EP coverage seem to be associated with those of Steven Pinker over this period. *How the Mind Works* had a highly professional publicity campaign organised around it by (at the time) the only professional science publishing PR in the country, and received a phenomenal amount of coverage in the UK media as a whole. As well as book reviews,[20] this included many other articles about both book and author. Pinker came to Britain when his book was published in January 1998, and conducted many interviews, book signings, radio appearances and public appearances,

[19] The title, 'How the Mind Works' was first used by the UK educational psychologist, IQ tester and fraudster, Sir Cyril Burt, for an edited volume of (popular) essays originally broadcast as lectures, (see Burt, 1933). Whether Pinker got his title from here or not is unknown at present and could be purely coincidental.

[20] Many of the papers reviewed it in weekday and weekend editions, as well as in the Sunday newspapers.

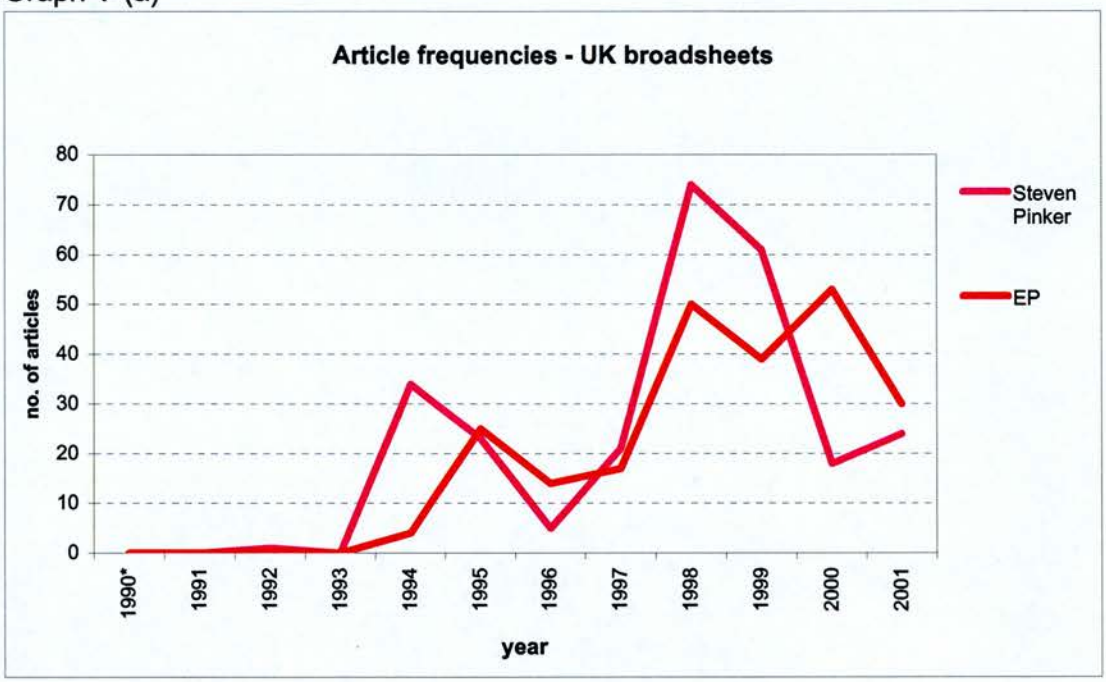
including a lecture at Darwin@LSE. This is reflected in the graph, with coverage beginning to rise in December 1997 as pre-publication publicity comes through, shooting up in January 1998 when book is published and Pinker does his media tour and falling again over the next two months. Coverage again rises in the middle of 1998, perhaps because the book became a bestseller, which then generates further publicity. Finally, there is another peak in the early part of 1999, when a paperback version of the book was published! This time, Pinker peaks the month before EP, but it is probably safe to conclude the two are associated because coverage levels of both terms are at similarly low levels either side of this peak.

The 1999 book, *Words and Rules* was published in October 1999, and may account for the 'shoulder' on Pinker's 1998 peak seen in Graph V (a). It was a smaller, lower key book and was concerned specifically with linguistics and the study of grammar, as the title suggests. The 2002 book, *The Blank Slate*, was published too recently to be inside the scope of this analysis. However, this book is again a promotion of the evolutionary psychology viewpoint, this time attacking the (alleged) social science and 'leftist' view of human nature as a 'blank slate'. Although by this point, I was not monitoring the media as closely as previously, my general impressions were of a similar spike in coverage, albeit not as widespread or frenzied as occurred in 1998.

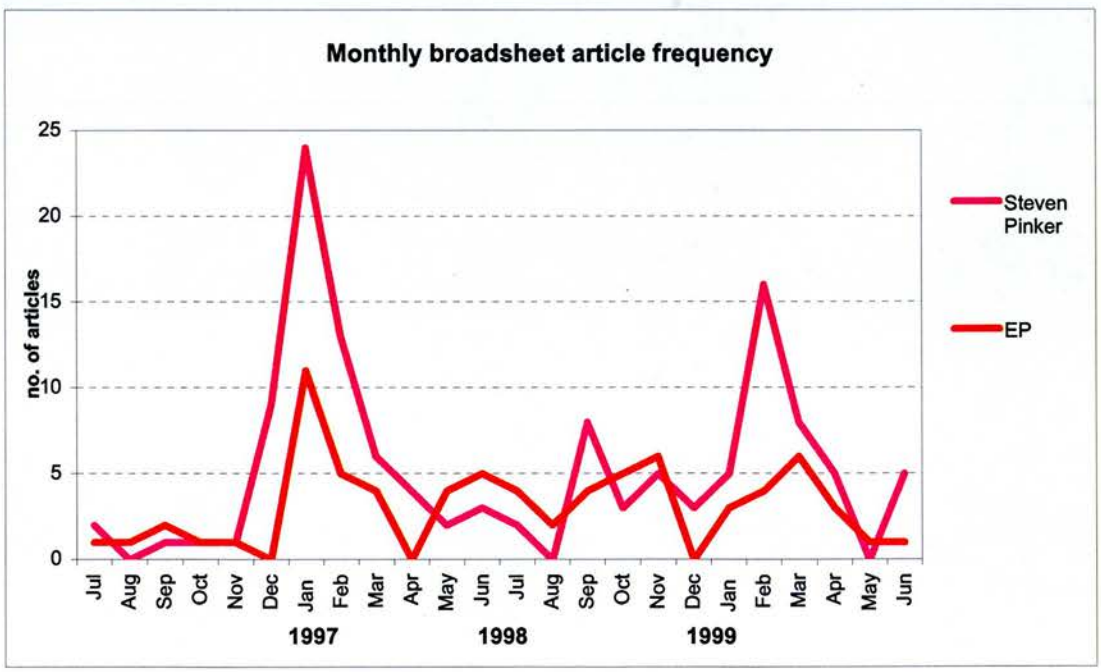
4.4 THE PRESS AND POPULAR SCIENCE

4.4.2 1998 – 1999: Steven Pinker

Graph V (a)



Graph V (b)



4.4.3 1999 – 2001: A new phase of discussion?

The period of 1999 to 2001, when the final peak in evolutionary psychology coverage occurred, is much less simple than the previous two in terms of relationships between publishing and press coverage. Although there were other books published in the earlier periods, it was quite clear that the Wright and Pinker books attracted the most attention in the press, and both of which were unambiguously pro EP. However, during 1999, 2000 and 2001, there was a much wider variety of books published around these issues, while the arguments being made had also broadened out to an equivalent variety of positions, including directly oppositional ones. By this stage, the term 'evolutionary psychology' had been in use in the pubic domain for over six years, and in my experience there was a consequently wider recognition of the term, as also discussed in Section 4.5.2.[21] A number of other events occurred which may have had effects on coverage of EP, most notably the initial publication of results from the Human Genome Project and of course the events of September 11th, 2001.

Something that has so far been ignored is the influence of academics and authors who were opposed evolutionary psychology in creating coverage of the subject in the media. The most prominent of these opponents in the UK context have been Hilary and Steven Rose, respectively a feminist sociologist and a neurobiologist. The Roses have consistently been publicly and critically engaged with social and political aspects of science since the 1960s, and have been concerned with issues ranging from biological/chemical/nuclear weapons, through gender bias in science, biological determinism and the public understanding of science. Both of the Roses were engaged in the sociobiology controversy during the 1970s and 1980s. As the terms of discussion have moved on from 'sociobiology' to 'evolutionary psychology', so have the Roses, and each of them have been active in publicly arguing against it from their own disciplinary backgrounds. This opposition culminated in the publication of an edited book, *Alas Poor Darwin: Arguments Against Evolutionary Psychology* in 2000,[22] and has been ongoing in

[21] I have found that in the past couple of years people I meet are more likely to know what 'evolutionary psychology' is, whereas in the past (up to about 2000) I would have to spend ages explaining it, most successfully through examples

[22] *Alas Poor Darwin* was subtitled *Escaping Evolutionary Psychology* in its paperback edition (2001)

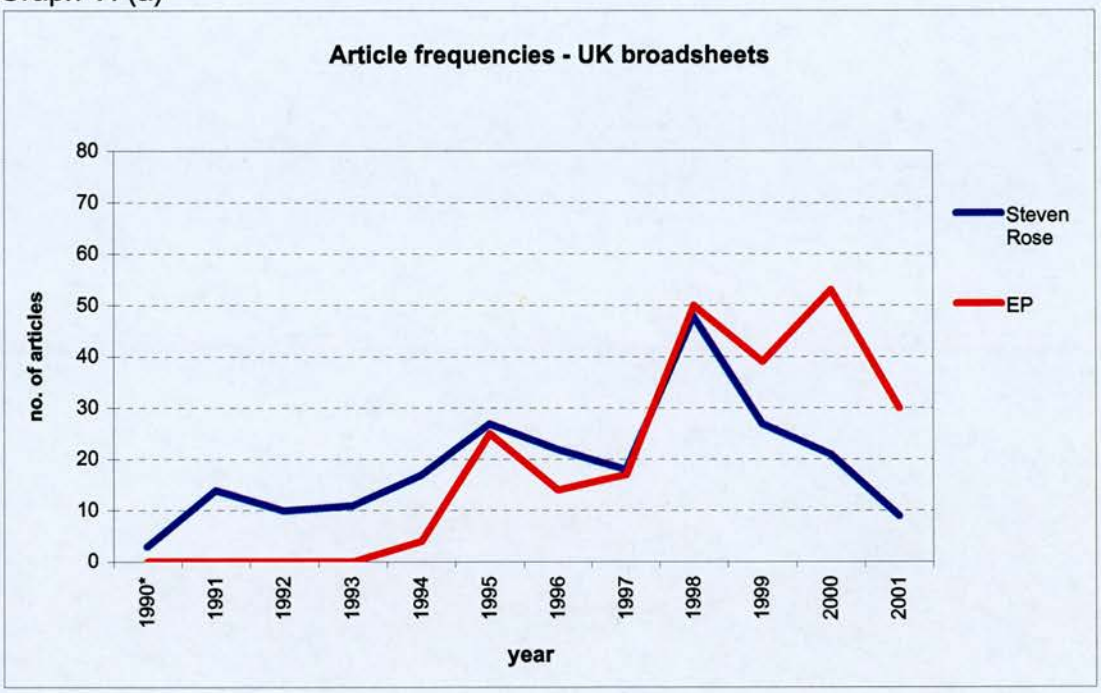
other public contexts since then. Steven Rose has a longstanding involvement in popular science, and tends to be more engaged in these arguments in the public domain than Hilary Rose, particularly in terms of media involvement. Because of this, and probably because of his status as a biologist, he has been more often mentioned in the media coverage of evolutionary psychology. Therefore I have used his name as a search term for comparison with evolutionary psychology frequencies.

Graph VI (a) shows the frequencies of articles mentioning Steven Rose against those for evolutionary psychology for the whole time period of study. The graph appears to show that coverage of Steven Rose peaked at the same time as EP during 1995 and again in 1998, while in 2000, when the book was published, Rose's coverage shows a slight upward twitch in an overall downwards trend. However, breaking down these figures on a month by month bass reveals a more complex picture. Graph VI (b) shows the frequency of Steven Rose with that of EP for the period 1994-1995. Looking at the graph, it is immediately obvious that the two are peaking at quite different points: at this time, Steven Rose seems to have been largely active in the media about quite different issues than evolutionary psychology. Graph VI (b) shows a monthly breakdown for the period of June 1997 – June 1999, and here there seems to be a closer relationship between the two, especially in January and June 1998 and March 1999. These coincide with the peaks seen in Graph V (b), of Steven Pinker's media appearances around the publication of *How the Mind Works*. This would fit well with the fact that by this time, Rose was actively engaging and arguing against EP in the media, and was being publicly identified as an opponent of Pinker's. Finally, Graph VI (c) shows the 2000/2001 period, and there are two possible points of concurrence: in June / July 2000 (*Alas Poor Darwin* was published in July that year), and again in November. Coincidentally, this graph also shows that the overall trend for EP coverage to drop off in the year 2001 actually occurred early in the year, so cannot have been a consequence of the September 11th attacks.

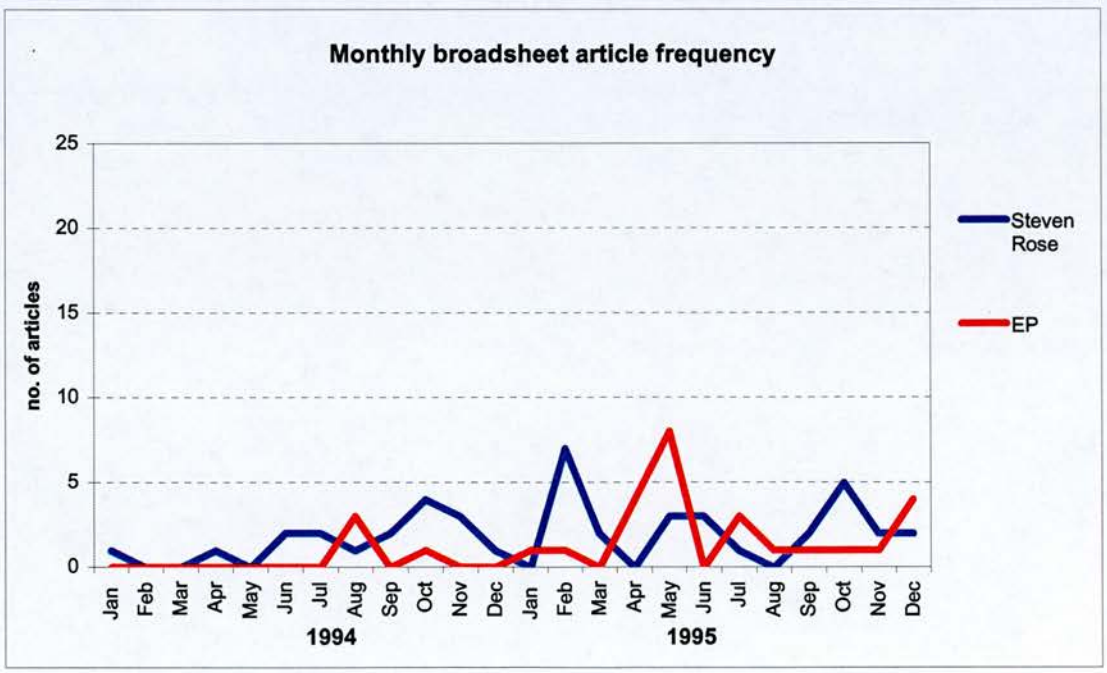
4.4 THE PRESS AND POPULAR SCIENCE

4.4.3 2000 – 2001: A new phase of discussion?

Graph VI (a)



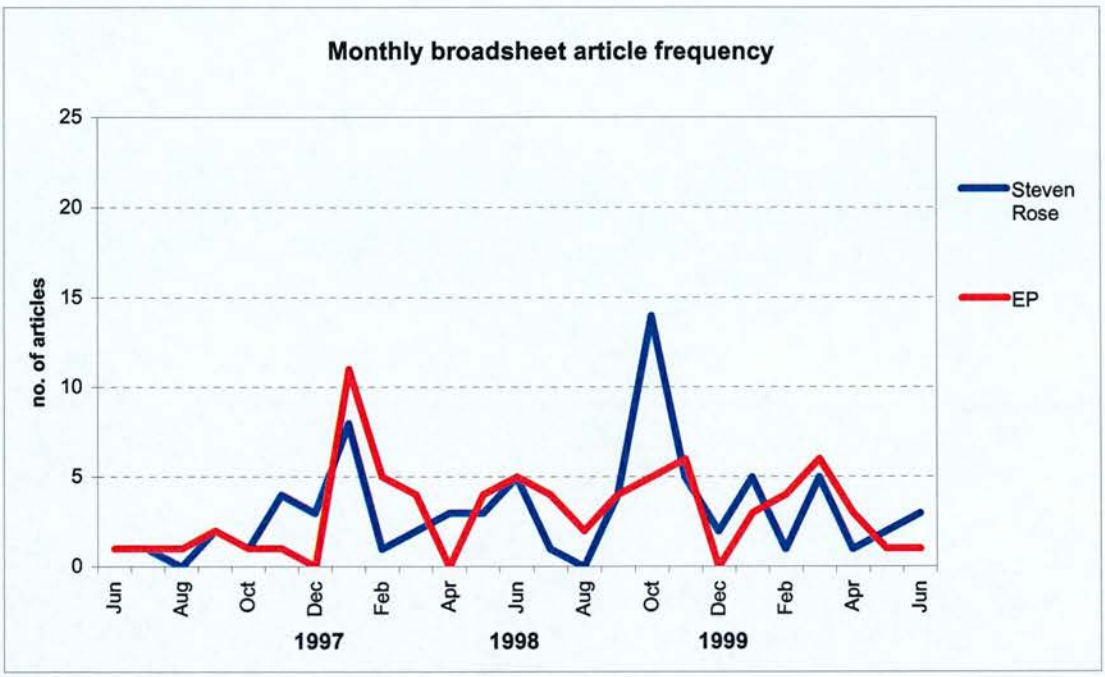
Graph VI (b)



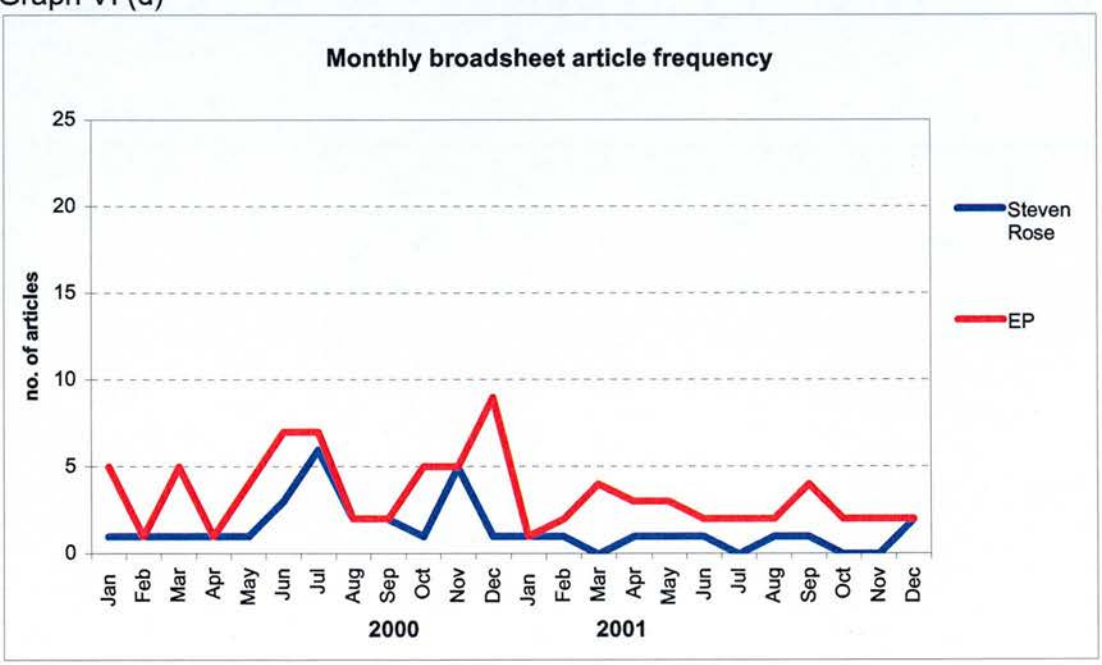
4.4 THE PRESS AND POPULAR SCIENCE

4.4.3 2000 – 2001: A new phase of discussion?

Graph VI (c)



Graph VI (d)



This detailed analysis immediately highlights the dangers in assuming that any of these authors are *solely* responsible for EP coverage at any point in time, or even in assuming that coverage of authors promotes coverage of EP rather than the other way around. Such an analysis can only *suggest* relationships between EP coverage and the publication of books. Secondly, to quote the often repeated (but often ignored) adage, *correlation does not imply causation*: these data do not tell us anything about whether the book publications are promoting discussion of evolutionary psychology, or discussion of evolutionary psychology is promoting the books. However, the responses of my interviewees when they saw this data does suggest that my interpretations are broadly correct. In particular, this exchange with a popular science publicist occurred as soon as I brought out the graph, and before I started to explain what I thought it meant.

> Interviewee: These are book publishing peaks, aren't they? This is *How The Mind Works*...
> Me: Yes it is – you run a search for Steven Pinker and you get a peak here... and this is the Robert Wright book.
> Interviewee: You've got to show this to Steven. Can I email him and tell him, it's very amusing.... And it's going up again...!
> (Respondent 11 - popular science publishing PR: interview, 28/07/01)

To summarise, I would there make the following initial interpretations of these data. There are clear links between frequencies of coverage of evolutionary psychology and that of the American author Robert Wright in 1994 and 1995, which coincide with the publication of his book *The Moral Animal* in the USA in 1995 and the UK in 1995. The label 'evolutionary psychology' does not appear in the media before this date, and most articles about the subject do also mention Wright. Therefore, Wright's book introduced the term 'evolutionary psychology' into the UK public domain at this time. In 1998 and early 1999, there also appear to be links between EP coverage and that of the evolutionary psychologist Steven Pinker. The indications that coverage of the neurobiologist Steven Rose, who was strongly opposed to evolutionary psychology, was also associated with these trend suggests that coverage of the controversy may have helped the visibility of both the book and the subject. In the period from late 1999 to 2001, the situation becomes much less clear cut. By this stage EP had been in the public domain for over six years, and was being mentioned in the press for a wide variety of reasons. There are suggestive links between EP coverage and that of Hilary

and Steven Rose's *Alas Poor Darwin* in the year 2000, but these are much less clear or certain than in the earlier period.

The falls in coverage for evolutionary psychology, but also closely associated terms such as 'Darwinian' and more loosely associated terms such as 'genetic', suggests a change of mood after the year 2000. As I described in section 4.2.2, leading up to then there had been an atmosphere of positively and excitement around biological subjects. This may have been partly associated with the huge amount of media hype that appeared leading up to the publication of the first draft of the Human Genome Project. However, after this, there seemed to be a turn away from this celebratory atmosphere towards a more critical one. This may in part have been prompted by the publication of a number of more critical books about evolutionary psychology, including Hilary and Steven Rose's *Alas Poor Darwin* (2000). This was mirrored by the movement of other figures, such as Melvyn Bragg, who has now largely moved away from science and back towards the arts programming he traditionally known for.

4.5 FEATURES OF PRINT MEDIA COVERAGE

4.5.1 Overall features of the coverage

Following the basic information on frequencies of broadsheet press coverage obtained from the CD-ROM analysis, content analysis techniques allowed me to gather further information on other features of the print media coverage of evolutionary psychology. Graph VII (a) shows the different types of articles written about evolutionary psychology in the UK print media from 1992-2000. Only a small proportion of the coverage took the form of news articles or reports on research findings, while the vast majority of evolutionary psychology articles were longer 'feature' articles, books and arts reviews, or columns/commentary pieces. In a similar vein, Graph VII (b) shows the different types of authors writing about evolutionary psychology in the print media. Twice as many articles were written by generalist journalists as by science journalists, whilst between them authors and academics accounted for about a third of the coverage. Of this section, half of it was written either

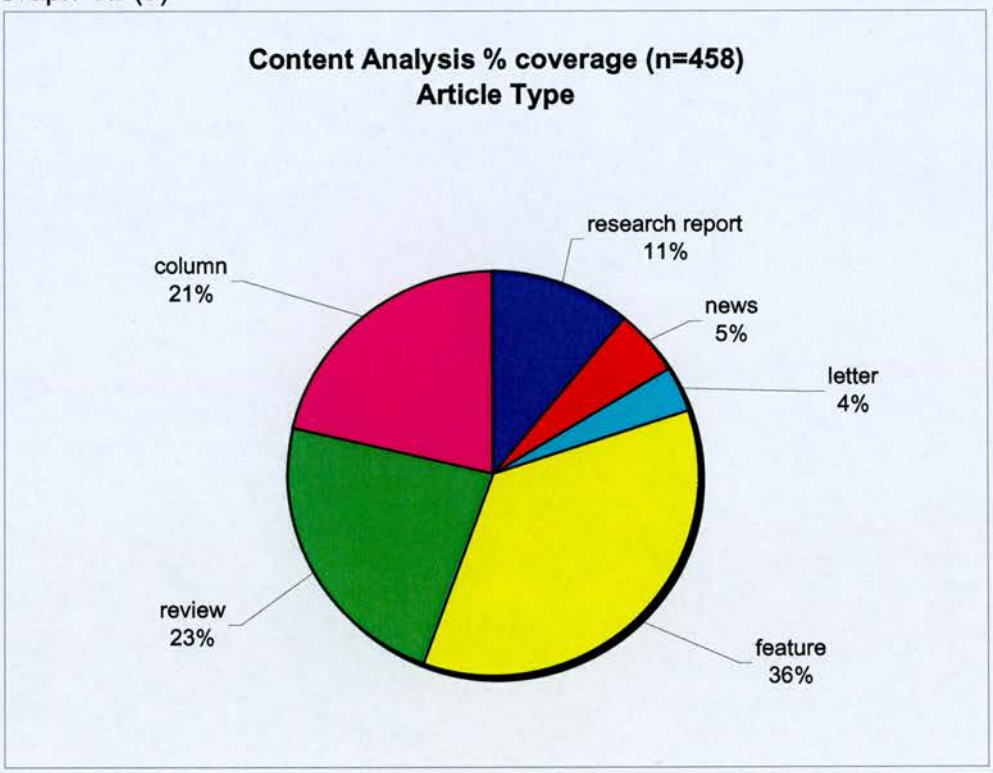
by 'evolutionary psychologists', or by their direct opponents such as the Roses. More will be written on the wider implications of these figures in section 4.6, where direct comparisons are made between evolutionary psychology coverage and that of other sciences in the media.

Finally, Graph VII (c) shows the attitudes expressed towards evolutionary psychology and the claims that it makes. This was classified into four broad categories of article 'tone': actively promoting evolutionary psychology; accepting of evolutionary psychology or passively reporting findings with no comment; expressing scepticism of EP while still reporting the claims made; actively opposing or dismissing evolutionary psychology. This is a particularly interesting finding considering that both sides in the EP controversy tend to regularly claim that the media is biased against them and towards the other side. Content analysis has found that a higher proportion of the coverage was broadly positive rather than negative about evolutionary psychology and the claims that it makes. This may be partly due to generalised patterns of reporting research in the media, in which findings and claims are reported in a passive manner, with no evaluations made by the writer. However, the fact that almost twice as much coverage actively supported EP as opposed it does suggest that the media as a whole was showing more support then scepticism.

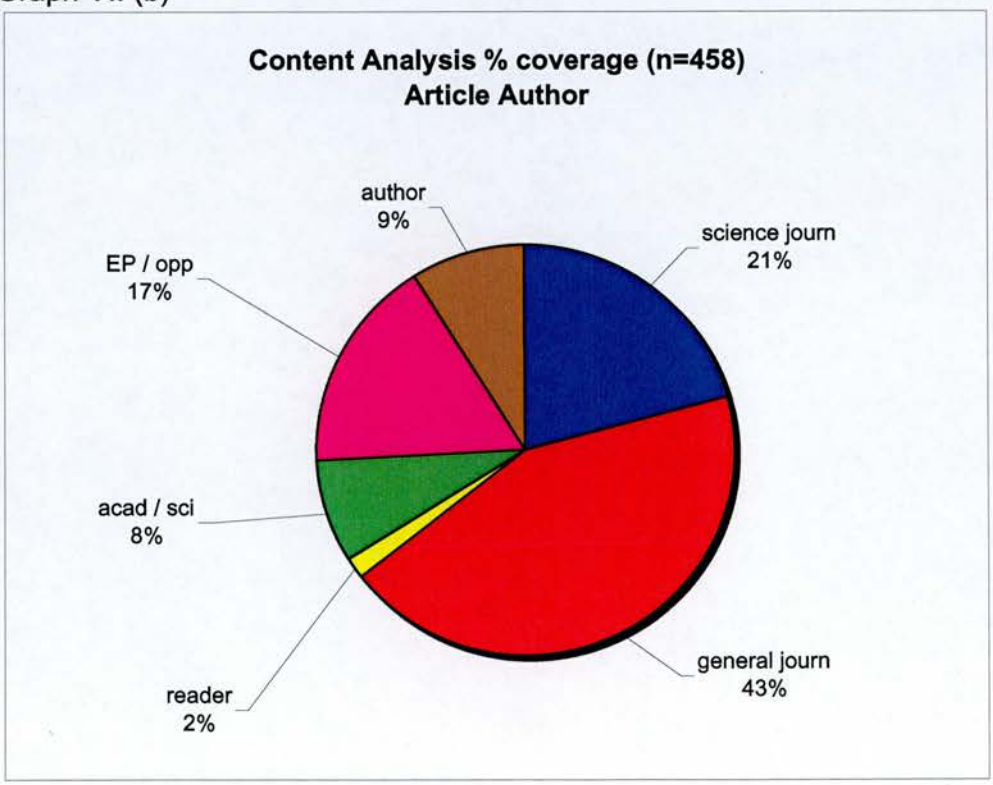
4.5 FEATURES OF PRINT MEDIA COVERAGE

4.5.1 Overall features of the coverage

Graph VII (a)



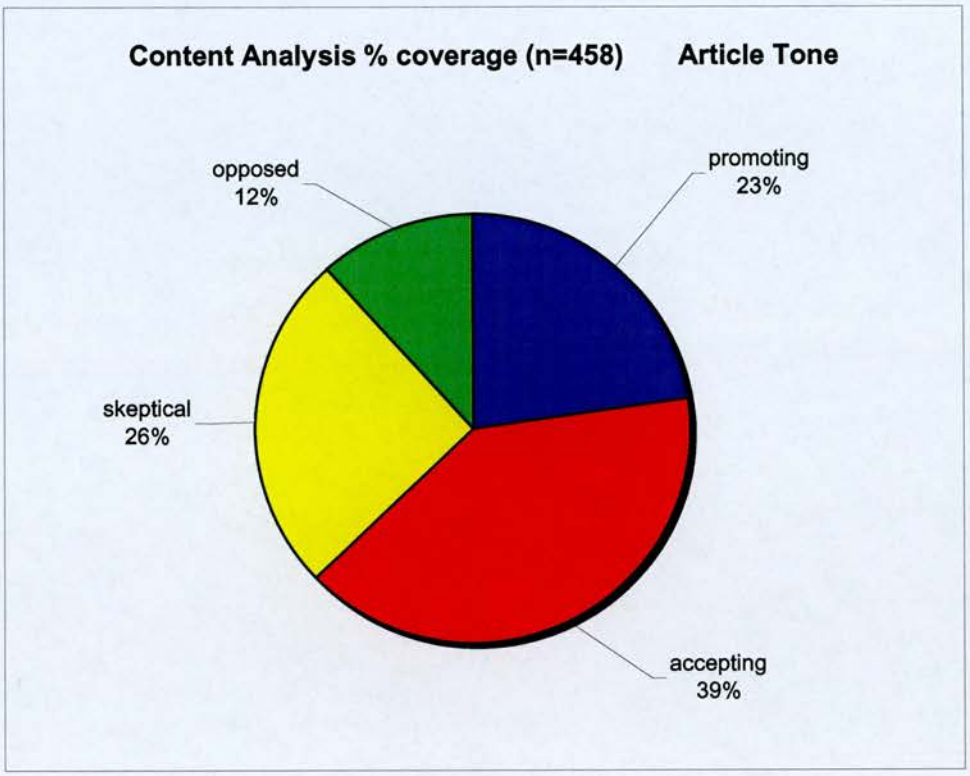
Graph VII (b)



4.5 FEATURES OF PRINT MEDIA COVERAGE

4.5.1 Overall features of the coverage

Graph VII (c)



4.5.2 Major themes of discussion

As well as looking at features of EP coverage like the length and tone of articles, content analysis allows for an assessment of what kinds of issues are being discussed in relation to evolutionary psychology. My impression from working with this material has been that media discussions tended to concentrate on the implications of evolutionary psychology for our understandings of gender relations and sexuality, with a second perceptible thread of discussion centering on biological determinism. The issue of evolution and gender was one of the things that initially drew me to this research topic, and so it is possible that this has led me to focus exclusively on this area. To this end, after spending some time reading through the material collected for content analysis, I constructed five coding categories that discussions of EP seemed to relate to. These were:

- sex (sexuality, sexual behaviour or sexual attraction)
- gender (issues of gender politics, roles of men and women in society)[23]
- determinism (biological determinism, biology and free will, possibilities of social change)
- Darwinism (focus on EP practitioners, controversy or influence of evolutionary ideas in/on wider culture)
- science in society (relations of science to society, public understanding and communication of science).

In addition to these, some of the coverage did not fit into these categories, referring to a very broad range of issues and with only small numbers of articles on each one. An example of this might be articles on the uses of evolutionary psychology in management theory. Therefore, an extra category of 'other' was created for this eventuality. All print media articles collected were then classified into one of these categories according to the major topic addressed. Because much of this coverage was quite lengthy and complex,

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[23] I understand that this represents somewhat of an artificial distinction, but in the public domain of the media the two often are treated very differently.

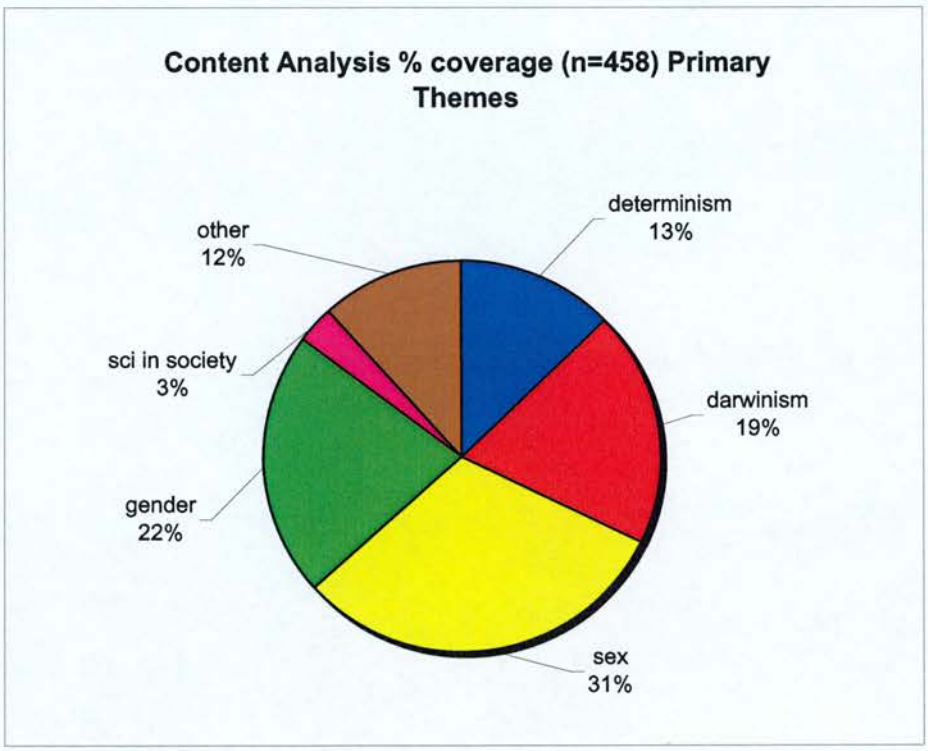
often more than one issue was discussed. To deal with this, articles were also classified according to any secondary theme of discussion present in the text.

Graphs VII (a) and (b) shows the distribution of discussion of these themes amongst print media coverage of evolutionary psychology. These findings immediately confirm this discourse is indeed dominated by concerns about the implications of evolutionary psychology for gender and sexuality. On the face of it, more articles were primarily devoted to sexuality related topics than gender politics, with the opposite pattern displayed for secondary themes of discussion.

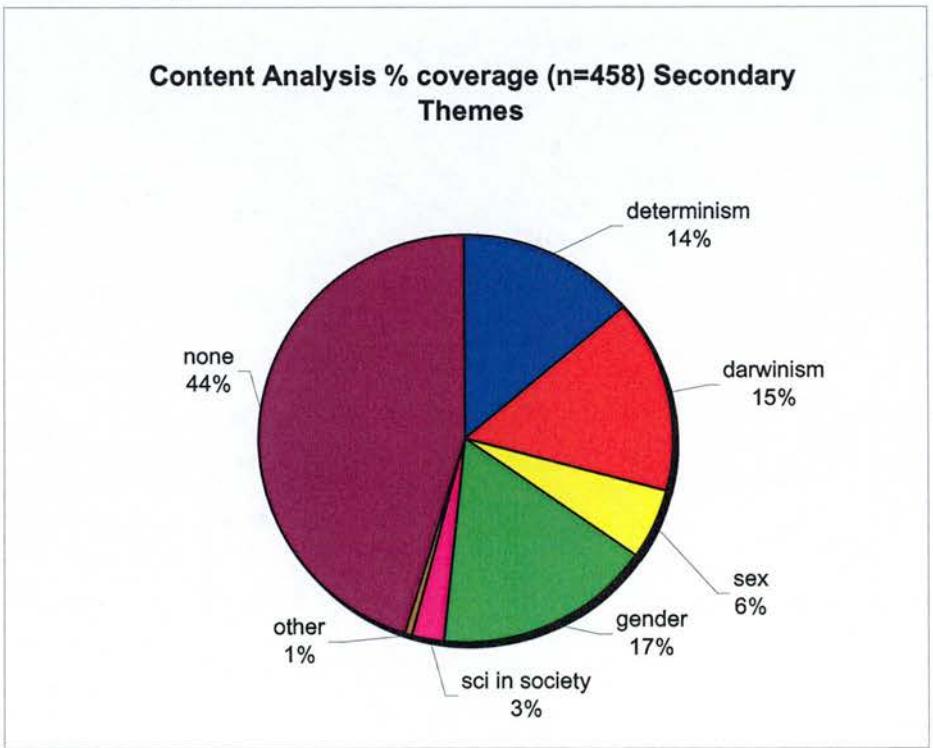
4.5 FEATURES OF PRINT MEDIA COVERAGE

4.5.2 Major themes of discussion

Graph VIII (a)



Graph VIII (b)

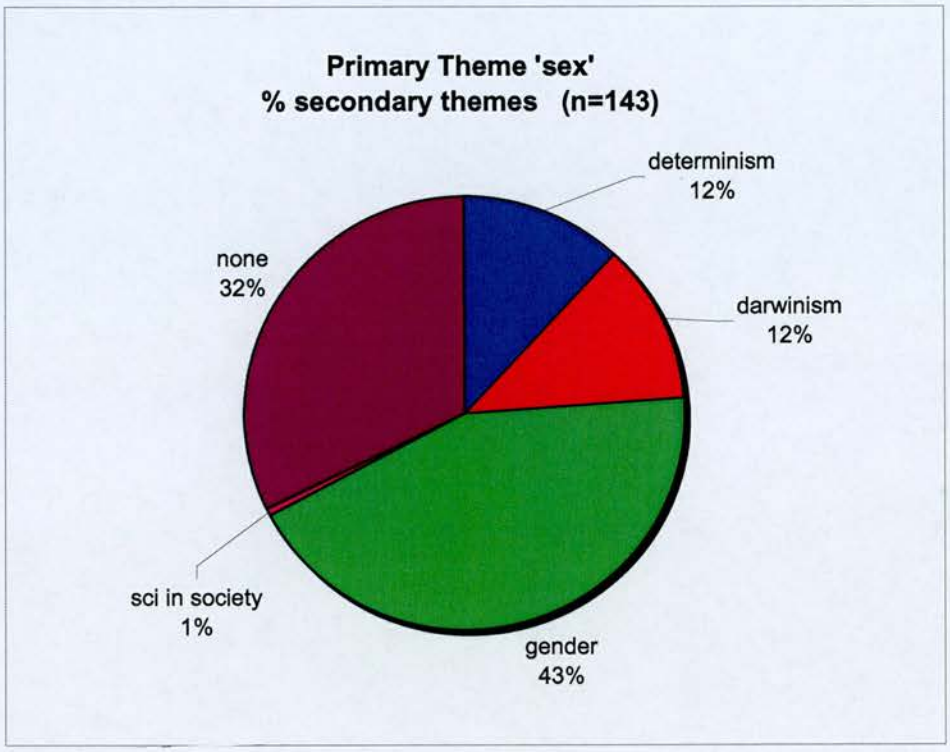


When the secondary themes of articles classified as having a primary theme of 'sex' or 'gender' are examined on their own, a more complex picture emerges, shown in Graphs VIII (c) and (d). Of those articles classified as primarily about 'sex', nearly half contained a second theme of discussion centred around 'gender', while of those classified as primarily about 'gender', only 14% had a secondary theme of 'sex'. This shows that a good deal of discussion about gender politics occurs under the guise of discussion about sex and sexuality. This breakdown also shows that, discussions of the two issues are often interwoven and together form a common thread in wider discourses of popular evolutionary psychology. There is also the interesting implication of an association between discussions of gender politics and biological determinism, perhaps relating to anxieties that the claims of evolutionary psychology can stand in the way of social change in this area.

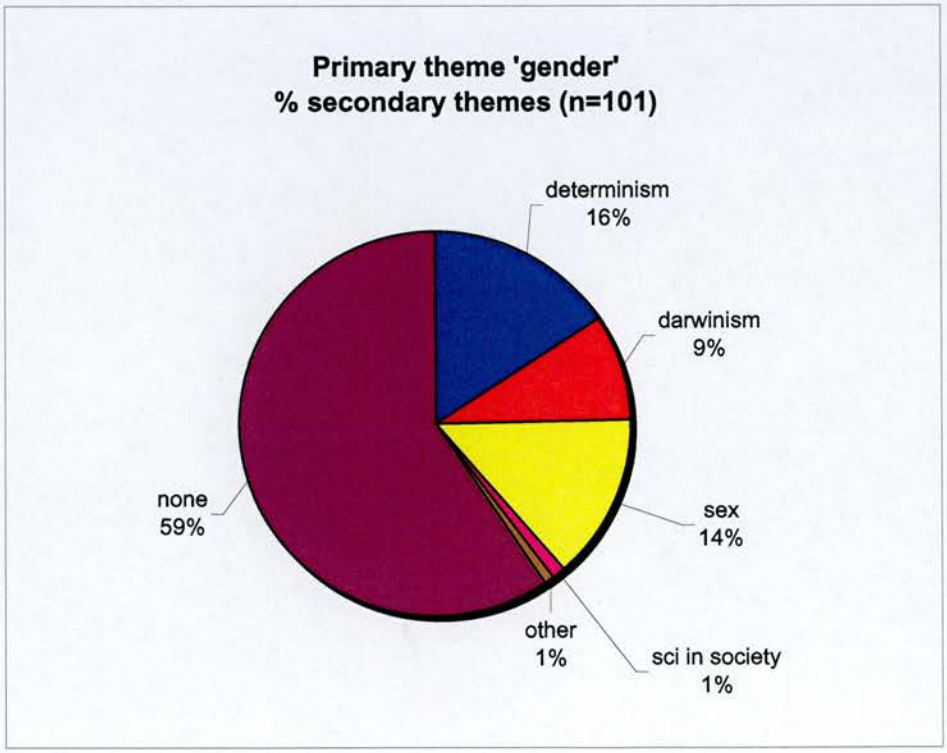
4.5 FEATURES OF PRINT MEDIA COVERAGE

4.5.2 Major themes of discussion

Graph VIII (c)



Graph VIII (d)

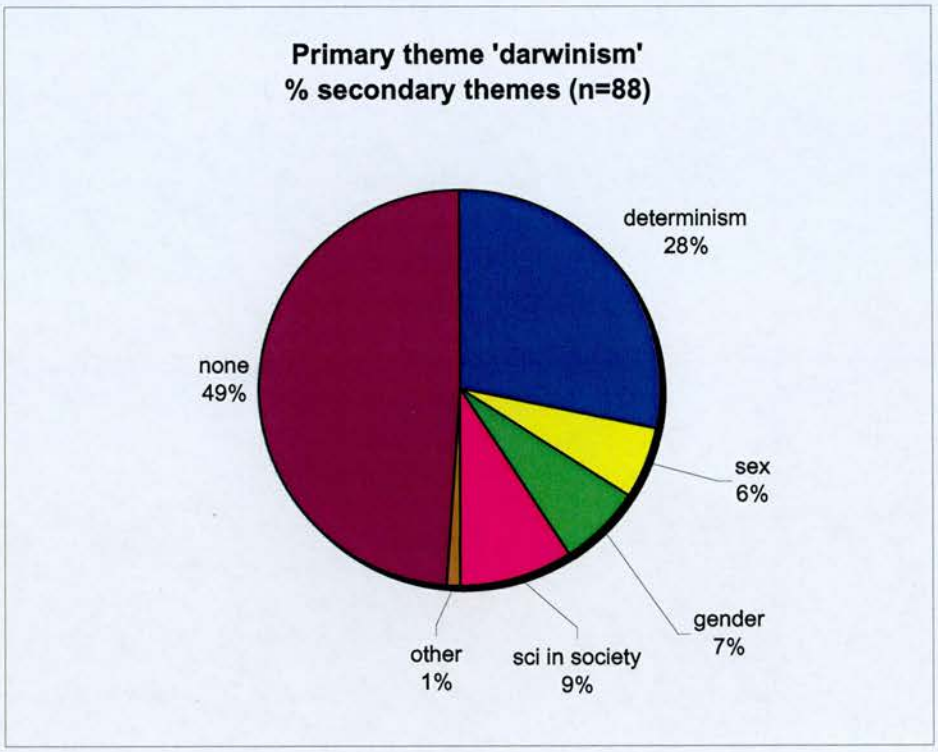


Beyond issues of sexuality and gender, a second common thread of discussion is together formed by the themes of 'darwinism' and 'determinism'. Together, primary discussions of these two form 32% of the overall coverage of evolutionary psychology, with similar levels of secondary discussion. When broken down as described above, 28% of articles with a primary theme of 'darwinism' have a secondary theme of 'determinism', while 22% of articles with a primary theme of 'determinism' have a secondary theme of 'darwinism'. This finding demonstrates the way in which evolutionary and Darwinian discourses are firmly linked with issues of biological determinism in popular discussions. Indeed, the connection in media coverage may well be as much due to people arguing *against* links between Darwinism and determinism as for them.

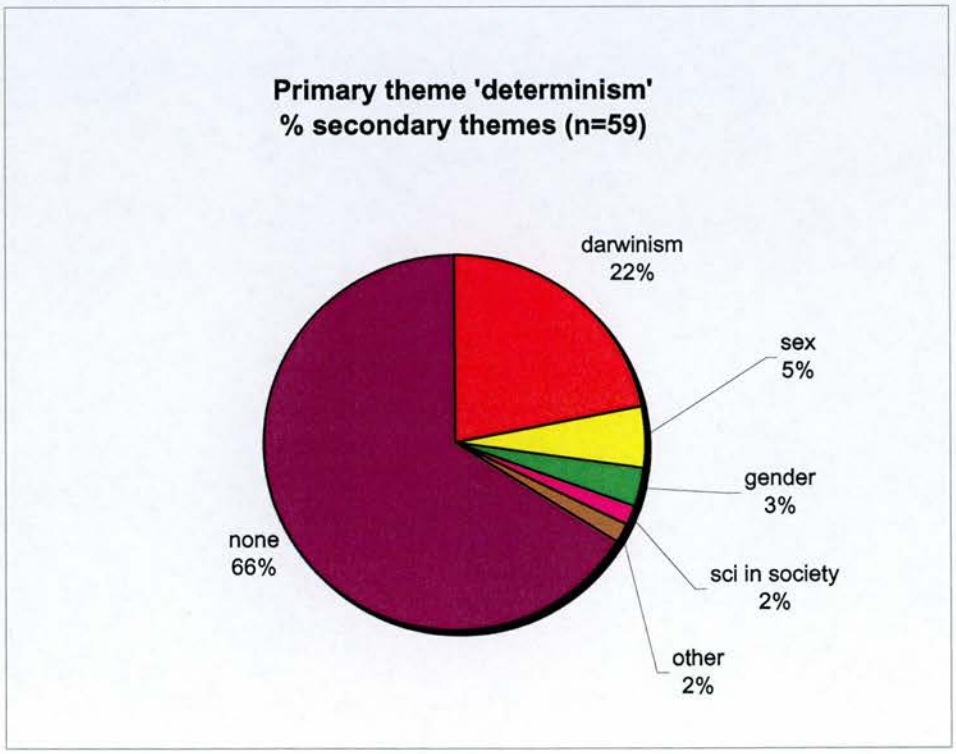
4.5 FEATURES OF PRINT MEDIA COVERAGE

4.5.2 Major themes of discussion

Graph VIII (e)



Graph VIII (f)



4.5.3 Time trends in discussions of evolutionary psychology

The content analysis also allows for the breakdown of the recorded data in order to show trends over time. Where such trends are found, they can help to show how discussions of EP developed and changed over the 1990s. Because, as we have seen, the levels of coverage have changed drastically over this time, the best way of making easy comparisons from year to year is to compare the relative proportions of each category as percentages. Graph IX (a) shows the changes in the approximate length of articles over the time period. Articles were classified into categories of:

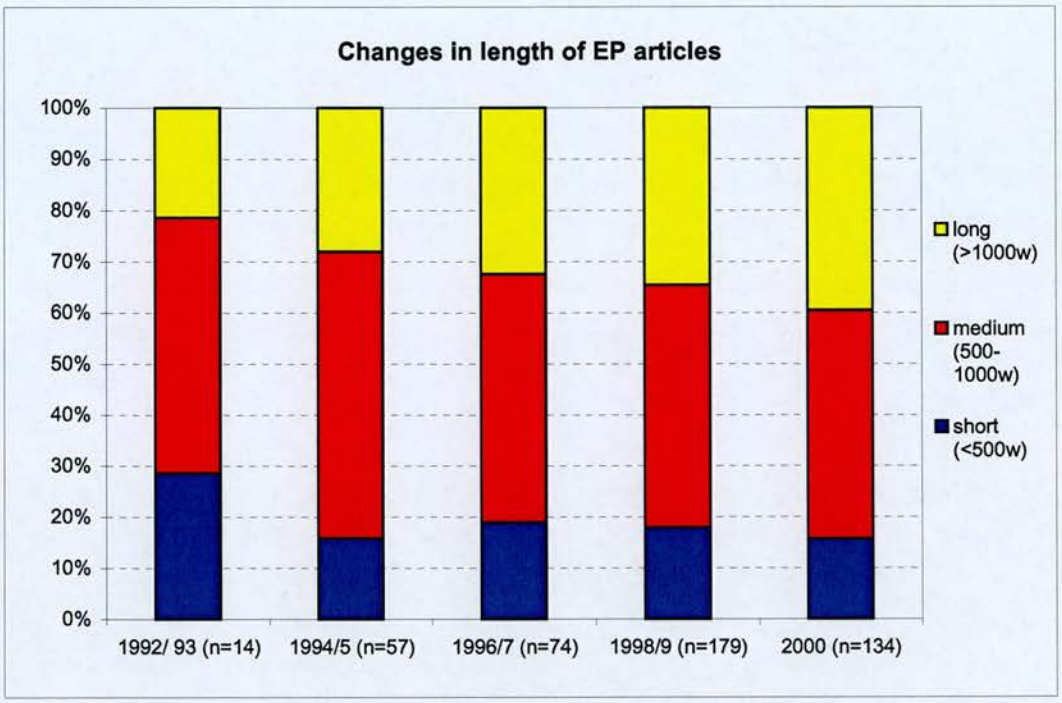
- short (less then 500 words)
- medium (between 500 and 1000 words)
- long (over 1000 words)

There was a definite trend towards articles getting longer, with the proportion of articles over 1000 words increasing from 20% in 1992/93 to 40% in the year 2000. As is shown in Graph IX (b), the tone of articles also changed dramatically from 80% positive coverage at the start of the 1990s, to a fifty-fifty split between positive and negative coverage in the year 2000. I believe these are both indicative of a developing atmosphere of *debate* over evolutionary psychology. Discussion of the complex issues of concern in evolutionary psychology debates and representation of the multiple viewpoints simply requires more space. The increasing levels of 'opposed' articles also reflect this shift, as actors opposed to evolutionary psychology mobilised themselves and their arguments in reaction to the initial claims made for EP in the earlier periods of discussion.

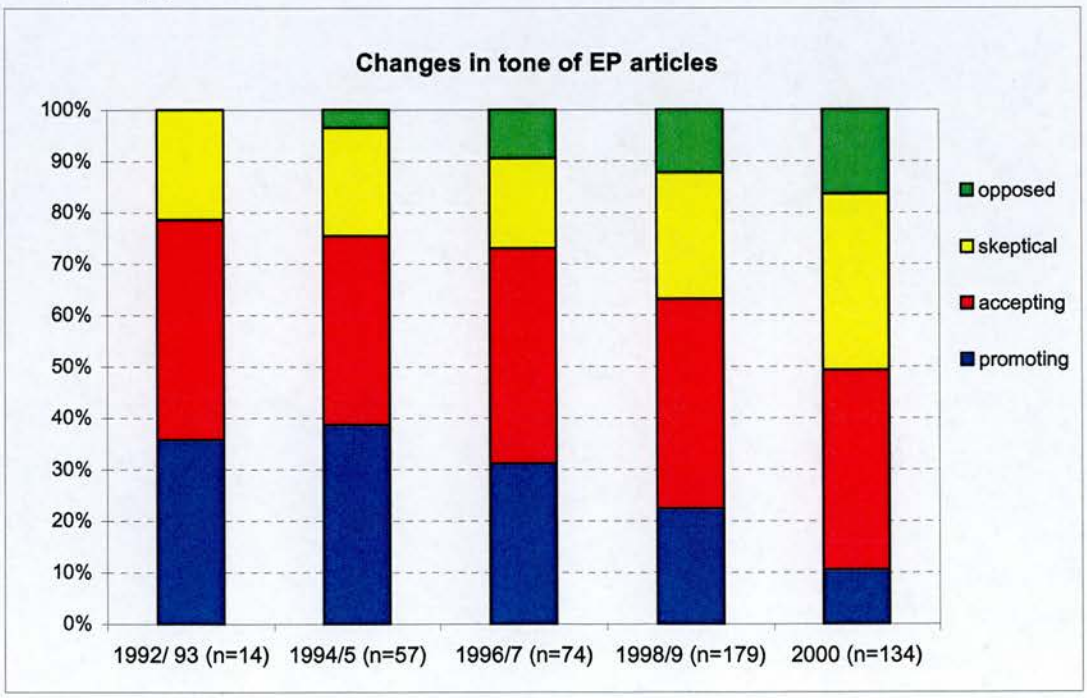
4.5 FEATURES OF PRINT MEDIA COVERAGE

4.5.3 Time trends

Graph IX (a)



Graph IX (b)

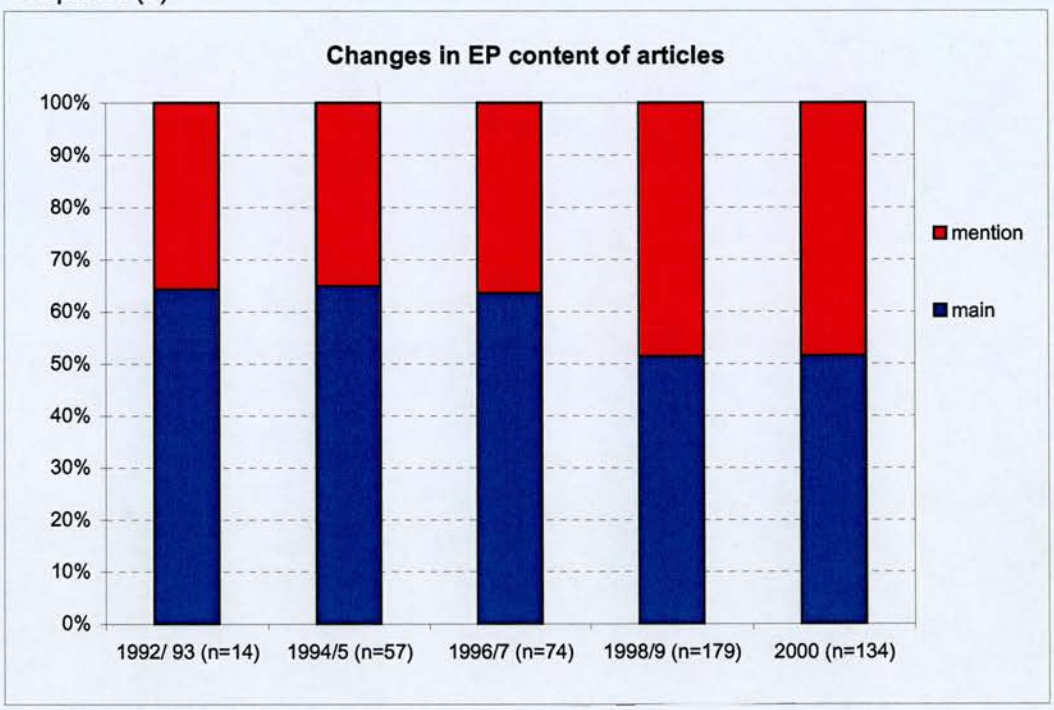


Graph IX (c) looks at the proportion of coverage substantially about evolutionary psychology compared with that mentioning it in the context of discussing something else. Over the Nineties, there has been a slight but perceptible shift towards increasing levels of coverage mentioning EP in passing. This reflects the development of a wider awareness of the term in recent years as discussed earlier, and may help to explain why detailed patterns of coverage became more difficult to follow as time moved on. Graph IX (d) shows trends in publication sites for evolutionary psychology. In terms of the broadsheet press, this can be seen as a shift in coverage from the centre-rightwing newspapers, the *Times* and *Telegraph*, broadly to the centre-leftwing newspapers, *Independent* and *Guardian*. In part, this may be due to the change towards more lengthy 'debate' based coverage, as the *Times* in particular seems to carry less 'features' material. Interestingly, the *Telegraph* places particular emphasis on its science reporting, with coverage in daily news, an extensive science supplement and sponsorship of a yearly Young Science Writer's prize. The shift towards 'debate' based coverage and away from the *Telegraph* may be related to this feature, as traditional styles of science reporting do not usually allow for a full and complex portrayal of scientific controversies. In addition, this shift from rightwing to leftwing press may reflect the changing political alignments of evolutionary arguments, more of which will be discussed in Chapter 5.

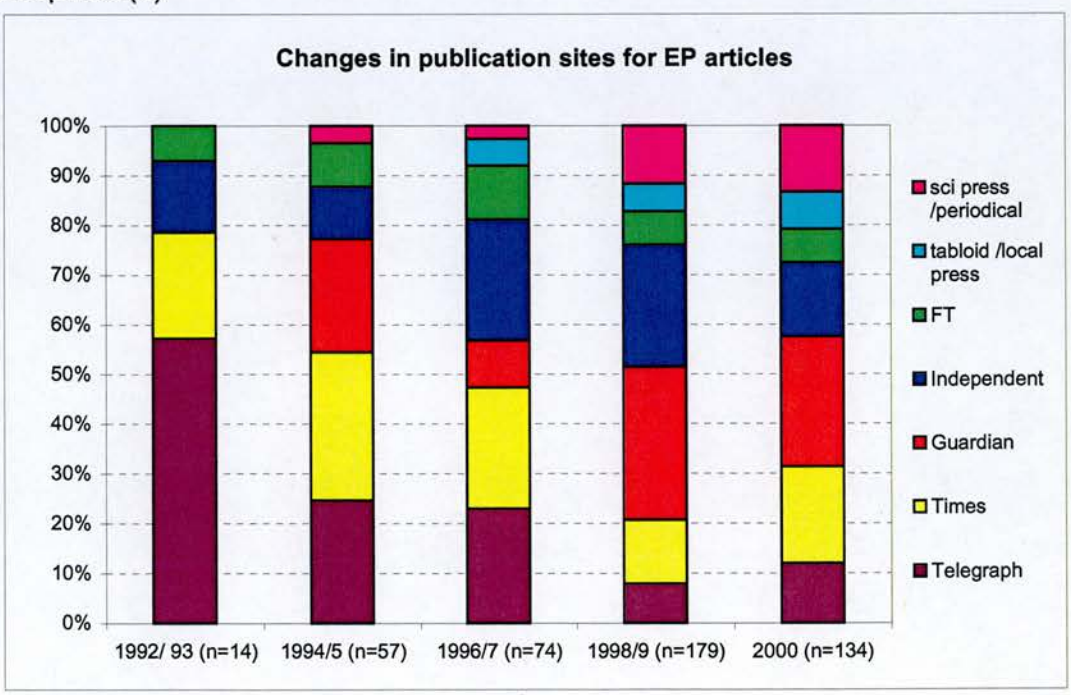
4.5 FEATURES OF PRINT MEDIA COVERAGE

4.5.3 Time trends

Graph IX (c)



Graph IX (d)



4.6 COMPARISONS WITH OTHER 'SCIENCE' COVERAGE

One of the research questions that this analysis has set out to answer was whether media treatment of evolutionary psychology was in any way different to more generalised patterns of coverage of the other sciences in the print media. The database format of the broadsheet press's CD-ROM archives has made it possible to make direct comparisons over the time period of evolutionary psychology's coverage in the UK media. This involved running a 'comparative' analysis of articles including both 'evolved and genetic' in the text, headline or byline. Although perhaps not a representative sample of all 'science' reporting in the media,[24] articles in this sample were largely about sciences closely related to evolutionary psychology, such as evolutionary biology and genetics, but which might be considered to be more conventionally 'scientific'. As such, this sample made for an internally valid and consistent comparison case.

4.6.1 Locations of articles

Graphs X (a), (b) and (c) compare the distributions of where in broadsheet newspapers articles containing the search terms 'evolutionary psychology', 'evolved + genetic' and 'darwinian' appeared. For 'evolutionary psychology' articles, 12% appeared in the main national and international news sections at the front of the paper, and only 5% of articles appeared in science sections or supplements. Nearly two-thirds of the articles were published either in some form of weekday supplement,[25] or in weekend supplements. The rest of the articles were in the form of either columns, or letters to the newspaper. This distribution contrasts very strongly with that found in articles including the terms 'evolved + genetic'. Nearly half of these articles appeared in either the main news or science sections of newspapers, with the rest in weekend supplements, weekday supplements, columns and then letters. Finally, articles containing the word 'Darwinian' show a very similar distribution to 'evolutionary psychology' articles. 'Darwinian' is a word often used when discussion evolutionary psychology, evolutionary

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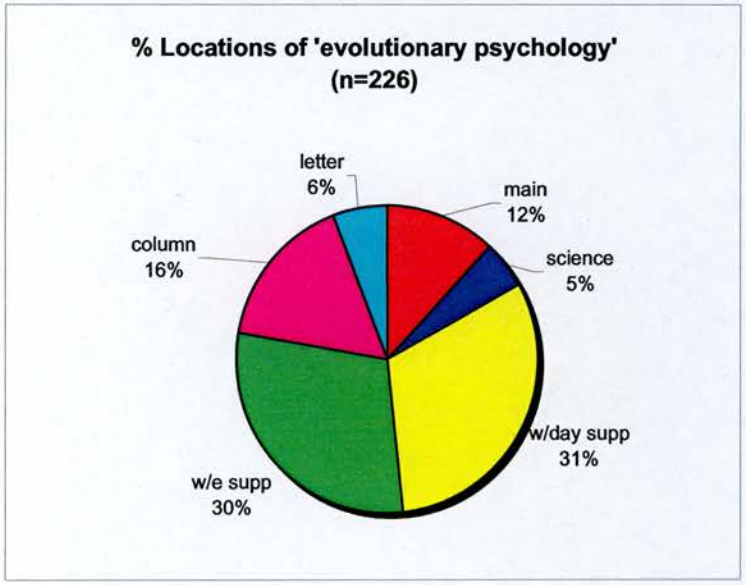
[24] As discussed in Chapter 2, such a concept is in any case deeply problematic.
[25] Such as the *Guardian* G2 tabloid, or an arts/reviews section of the newspaper.

biology or related disciplines, but is also used more generally in the press, particularly in financial and business coverage, generally as a synonym for intense competition. Therefore, this similarity between distributions for 'evolutionary psychology' and 'darwinian' also suggests that evolutionary psychology articles are published in the press in a pattern closer to more generalised patterns of coverage in the press than to distributions seen in science coverage. These findings are suggestive that there is something about the subject matter that results in it being treated by the media differently to more conventional patterns of 'science' coverage. It may even be that evolutionary psychology is often not actually being coded as part of 'science' in the public domain. This may have something to do with the fact that evolutionary psychology is an area of science that is about people, and this changes the way that media professionals work with it. I will be exploring this suggestion at greater length in Chapter Six.

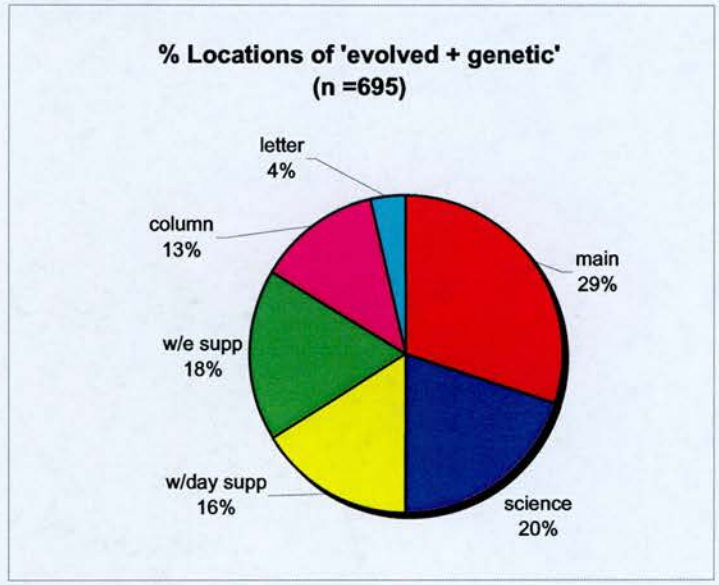
4.6 COMPARISONS WITH OTHER 'SCIENCE' COVERAGE

4.6.1 Locations of articles

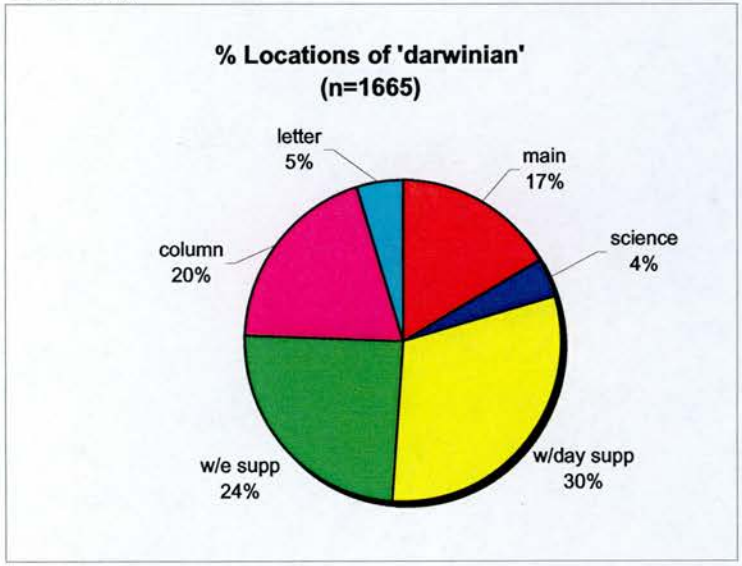
Graph X (a)



Graph X (b)



Graph X (c)



4.6.2 Authors of articles

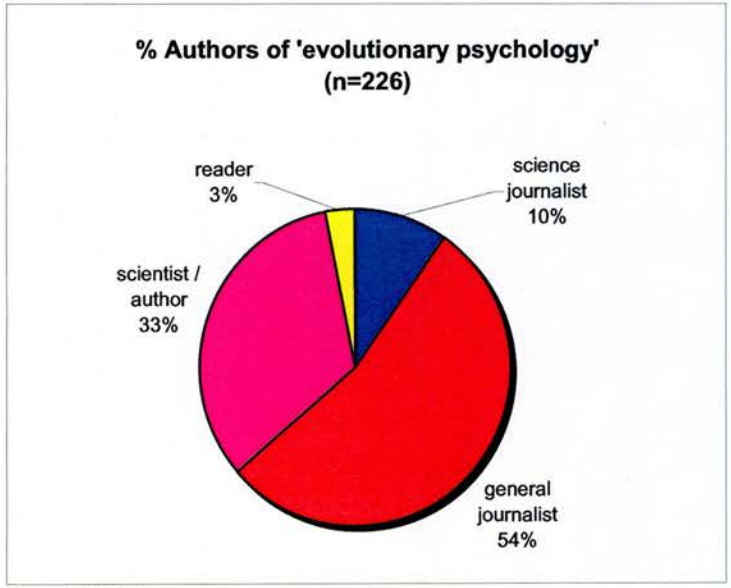
Graphs XI (a), (b) and (c) compare the distributions of different kinds of authors of articles including the search terms 'evolutionary psychology', 'evolved +genetic' and 'darwinian'. Ten percent of 'evolutionary psychology' articles are authored by specialist science journalists, while over half of this coverage is authored by journalists in other specialisms such as social affairs or politics, or by generalists who cover all subjects. In addition, a third of these articles were written by academics, authors and public figures who are not full time professional journalists, with a small number of articles taking the form of letters. This distribution contrasts even more strongly with 'evolved + genetic' than the differences seen in locations of articles. Nearly half of all the 'evolved + genetic' articles were written by science journalists, with 31% by other journalists, 20% by academics/authors and 2% readers' letters.

Unlike with the locations of articles, evolutionary psychology coverage was also written by a different distribution of authors to those including the word 'darwinian'. Non-science journalists wrote nearly three-quarters of 'darwinian' articles, with 13% by academics/authors and only 9% by science journalists. These findings are a little more complex than those described above for article locations. Differences in levels of coverage by science journalists between the 'evolutionary psychology'/'darwinian' articles and those including 'evolved and genetic' also indicate that evolutionary psychology is not being treated by the media as a classic 'science' subject. However, the far higher levels of evolutionary psychology coverage written by people who are not journalists, compared to 'darwinian' articles, suggests that in the case of evolutionary psychology, academics and authors are actively intervening in the public domain by writing articles on the subject. I will explore this suggestion in greater depth in chapter Seven.

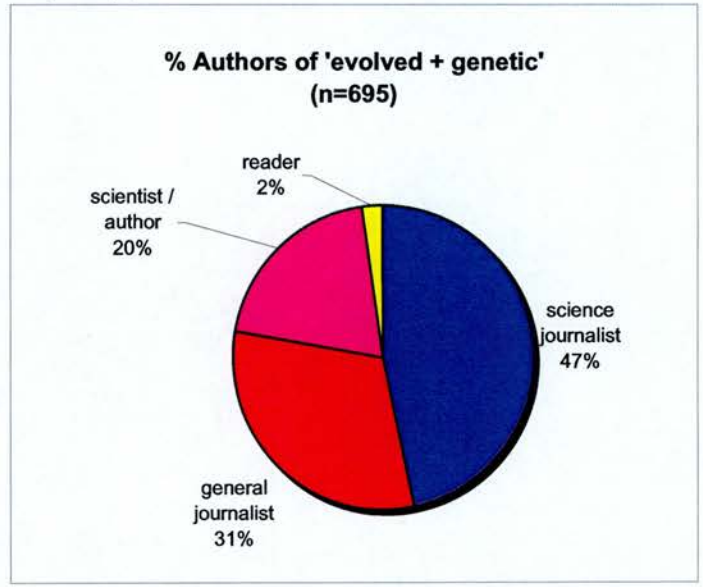
4.6 COMPARISONS WITH OTHER 'SCIENCE' COVERAGE

4.6.2 Authors of articles

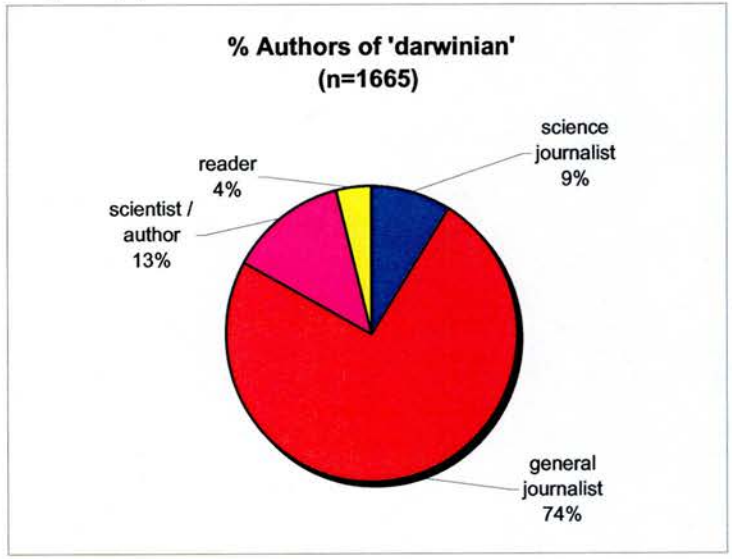
Graph XI (a)



Graph XI (b)



Graph XI (c)



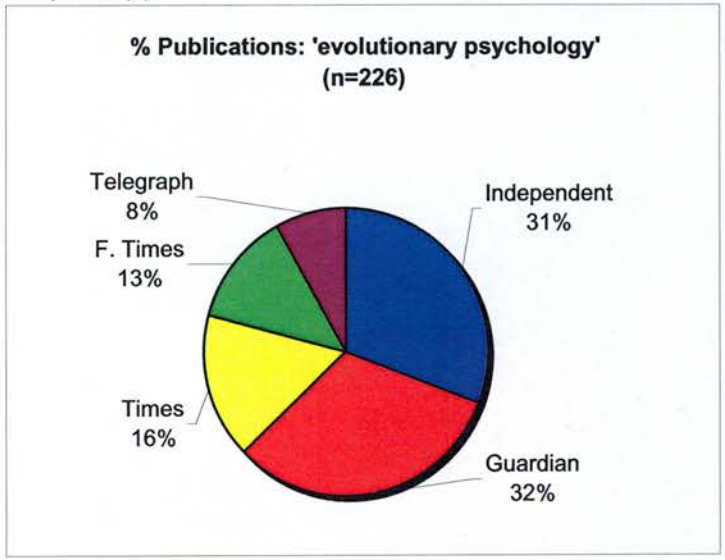
4.6.3 Sites of publication

Graphs XII (a), (b) and (c) compare the distribution of coverage amongst the five broadsheet newspapers sampled for 'evolutionary psychology', 'evolved + genetic' and 'darwinian' articles. The differences seen here are less dramatic, but still suggestive of the same overall trends seen in the other data. This is particularly in terms of the amounts of coverage in the *Daily* and *Sunday Telegraph*, with their strong emphasis on science reporting. The highest proportion of reporting in the Telegraph is seen in 'evolved and genetic' articles, then 'darwinian' and then 'evolutionary psychology' at only 8% of the overall coverage. This again suggests that evolutionary psychology is being treated by the press media as 'not science', and is accordingly less well reported by the *Telegraph* and more strongly by newspapers with a stronger emphasis on reporting social affairs, such as the *Guardian*.

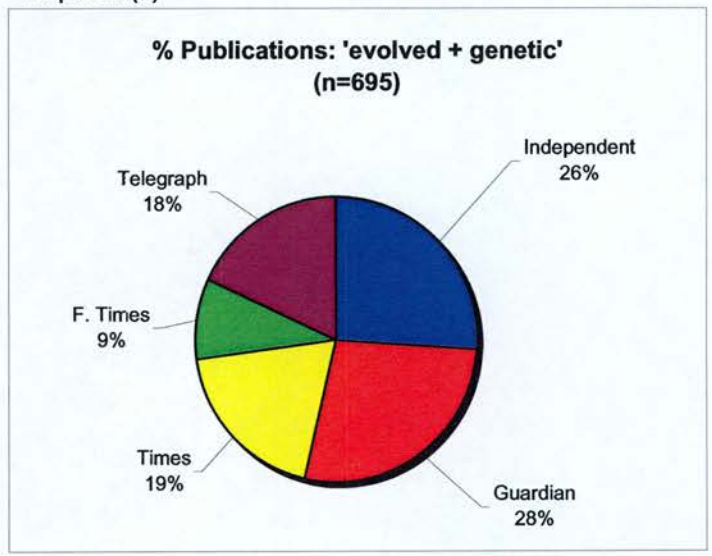
4.6 COMPARISONS WITH OTHER 'SCIENCE' COVERAGE

4.6.3 Sites of publication

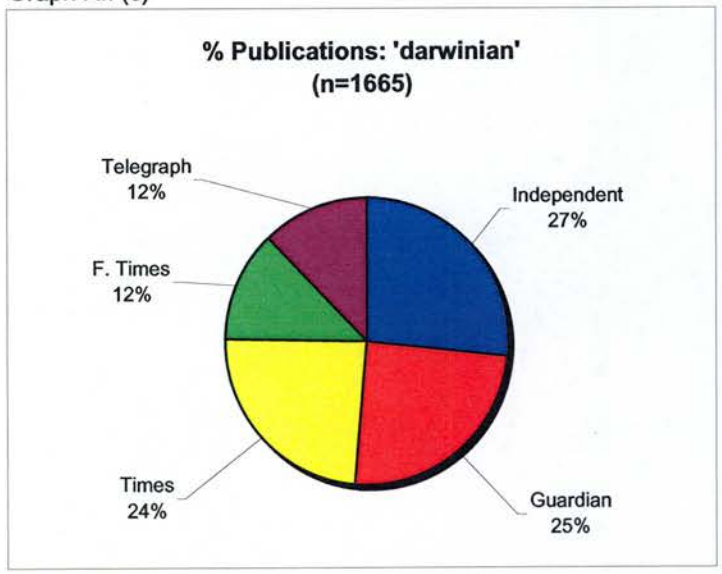
Graph XII (a)



Graph XII (b)



Graph XII (c)



4.7 EVOLUTIONARY PSYCHOLOGY IN THE UK MEDIA

In this chapter, I have painted an overall picture of evolutionary psychology in the UK media of the 1990s, reviewing occurrences on the major mass media forms in operation in this country. In order to get an idea of where and when evolutionary psychology was being discussed in the UK media, I collected material from a wide range of sources since starting working on the subject in 1998. This included articles in newspapers and magazines, recordings of TV and radio programmes, popular books on the subject, and material published on the Internet. The most important media for popular evolutionary psychology were book publishing, public lectures and the print media, while other media forms were on the whole less important but included some importantly focussed contributions to the whole picture. An important aspect of this was long established routines of co-operation between the different social worlds of the media, in this case surrounding the publication of books. In this, publishing largely relies upon the other media to publicise new books, while simultaneously providing them with valuable, regular and reliable sources of content and stories. In the case of evolutionary psychology, the presence of talented authors combined with public demand for popular science and cultural excitement about the biological sciences resulted in high levels of exposure for evolutionary psychology. This was facilitated by the activities of the Darwin@LSE programme of public lectures, which acted as a connection point for the worlds of academia, publishing and the other mass media.

I believe that part of the reason for the differential coverage of evolutionary psychology by different media forms was the nature of evolutionary psychology as a subject. It is fundamentally an 'ideas' subject, which can only provide good imagery for television coverage with work and concentration on issues such as sexuality that have high 'news value (see Chapter Six). Discussion is central to evolutionary psychology coverage, and television does not allow for the kind of depth and complexity of discussion required to make evolutionary psychology interesting. However, in formats where this space is available, such as talk radio, parts of broadsheet newspapers and books, evolutionary psychology comes into its own and it is these media forms where the subject appears most frequently.

It seemed that the most consistent coverage was appearing in the national daily press, particularly in broadsheet newspapers. Because of this, and also because these media have easily available archives, I decided that focussed quantitative analysis of the broadsheet coverage of EP would help throw light on the overall media picture. I carried out two analyses – one looking exclusively at broadsheet newspaper CD-ROM archives, and a content analysis addressing all the print media coverage I had collected. The results of these analyses were quite complex and are discussed in detail in Chapter Four, but key findings included the following:

- Evolutionary psychology first appeared in the UK press in 1994 and 1995, in connection with the publication of a popular science book, *The Moral Animal* (1995), by the American science writer Robert Wright. Coverage levels rose steadily, and then sharply, again in connection with the publication of another popular science book, Steven Pinker's *How the Mind Works* (1998). EP coverage peaked in the year 2000 and started to fall in 2001, although a lack of data means we do not know if this trend continued.

- Academic citations for 'evolutionary psychology' followed the general trend of mass media coverage, with very low levels of citation before the popular discussions of the subject appeared, and increases only occurring through the 1990s as popular levels of discussion increased.

- Levels of press discussion of related terms, such as 'sociobiology', 'darwinism', 'darwinian' and 'genetic' all echoed the general trend seen in coverage of EP, albeit without the publishing related peaks. These included the post-millennium dip in coverage, suggesting that this was a real trend.

- On the whole, the centre-left national press covered EP more than the centre-right press, while over the 1990s EP articles became longer and expressed more scepticism of EP claims. Over half the coverage was about sexuality or gender politics, while the themes of Darwinism and determinism were also important.

- Direct comparisons between evolutionary psychology coverage and that of a comparative 'science' subject found some marked contrasts in how newspapers dealt with the two subjects. EP appeared much less often in the main body of news or in science sections, and much more often in weekend or weekday supplements or in columns/commentary pieces. It was also written about far less often by specialists science journalists, and more often by generalists or by academics, authors and other commentators.

The bare bones of these findings, and the preliminary interpretations of them I have made throughout this chapter, will now be drawn upon in the rest of the thesis. I will firstly turn to the most immediate issue of concern in discussions of popular evolutionary psychology: that of the social and political contexts within which these debates were taking place. As I have established in Section 4.5.2, the majority of print media coverage about evolutionary psychology was concerned with issues of sexuality and gender politics, while issues of biological determinism and Darwinism were also of concern. Chapter Five will present qualitative analysis of this coverage, addressing in detail the kinds of issues that popular discussions of EP were keying into. Chapter Six will concentrate on the findings that evolutionary psychology was being treated by the media in different ways to other 'science' coverage, appearing as it did in supplements, reviews and columns, and written about by generalist journalists. I will draw on media and interview discussions to investigate why this was happening, and will then draw out the implications for constructions of expertise in the area. Finally, in Chapter Seven I will look at the suggestion that academics in this area have been communicating 'directly' to the public domain more than is usual for the sciences, where science journalists often speak for scientists. This is suggested by the findings in sections 4.4 and 4.6.2, and I will explore the implications of this for evolutionary psychology's relationships with the public domain and with other academic disciplines.

Chapter V:

Social and Political Contexts of Popular Debate over Evolutionary Psychology

5.1 INTRODUCTION

5.2 CLAIMS OF POPULAR EVOLUTIONARY PSYCHOLOGY

5.2.1 Males and females, men and women

5.2.2 Sex and beauty

5.2.3 Evolution and relationships

5.2.4 Families, work and the home

5.3 "FEMINISTS, MEET MR. DARWIN": EVOLUTIONARY PSYCHOLOGY AND GENDER POLITICS

5.3.1 'Mars and Venus': the battle of the sexes

5.3.2 Men and masculinity in the 1990s

5.3.3 Diverse Darwinisms, multiple feminisms

5.4 POLITICS, SOCIETY AND SCIENCE

5.4.1 'New Darwinism' and 1990s politics

5.4.2 Biology as the premier science of the 90s

5.4.3 Determinism, ideology and (possibilities for) social change

5.5 SUMMARY

Chapter V:

Social and Political Contexts of Popular Debates over Evolutionary Psychology

5.1 INTRODUCTION

> They [evolutionary psychologists] opened up big social, big Nineties questions, they really opened up the can in so many interesting ways, and whether they're right or wrong, I think they've made debates much more interesting.
> (Respondent 11 - popular science publishing PR: interview, 28/07/01)

In this chapter, I will sketch out the wider cultural contexts in which public debates over evolutionary psychology have taken place. In Chapters Six and Seven, I will be discussing the underlying factors in the social worlds of the mass media and academia that have led to such an extensive public debate over the subject. However, on their own, these factors cannot explain why it took place at the particular place and time that it did, or why the public domain provided such fertile ground for the kinds of discussions that took place. The quantitative work discussed in Chapter Four has shown us that evolutionary psychology appeared largely in the more upmarket, elite forms of the British media, from about 1994, rising sharply through the late 1990s and then falling again after the year 2000. Why did popular evolutionary psychology appear at this time, rather than five or ten years earlier or later? Why was it taken up so strongly in the UK and to a lesser extent, US media but not so much in the rest of Europe or indeed the rest of the world? These questions can start to be answered by looking beyond the particularities of the academic and media social worlds of evolutionary psychology to the wider cultural contexts in which they were operating at the time.

A good starting point for this is the material gathered from the media coverage of and around evolutionary psychology. Although some of this coverage simply discussed evolutionary psychology and Darwinian ideas on their own, most media coverage of EP discussed it in conjunction with other issues. As described in Chapter Four, section 4.5.1, just over half of all this coverage was also about sex, sexuality or gender issues and these topics were often closely interrelated in these discussions. Articles about EP also covered a range of other subjects, most prominently the increasing influence of

Darwinism in society, the increasing public prominence of biology (especially through genetics and biotechnology) and the existence of concerns over 'biological determinism'. However, these statistics cannot tell us much about the detail of these discussions, the particular events or claims that they were discussing, or why indeed these topics were considered to be of sufficient interest or concern to be covered by the media.

We must instead turn directly to the content of the claims made in popular evolutionary psychology and the kinds of responses that they provoked by academics and other commentators in the media. The particular ways in which *this* version of "being Darwinian, at humans"[1] has been represented by the different actors in the debate can tell us a great deal about the kinds of political and cultural contexts that have been shaping and shaped by evolutionary psychology. In addition, I attempted to explore these issues with my interviewees, asking them for their thoughts on the broad areas of how gender politics, genetics and biotechnology; and biological determinism were related to EP debates. I also found it very helpful to ask them to compare the 1990s context of evolutionary psychology with the 1970s one of the Sociobiology controversy. This worked particularly well with the older interviewees who had been involved in this earlier episode, but it was also of help with the younger actors in getting them to think about the wider cultural contexts of evolutionary psychology.

I have found this comparison between Sociobiology and evolutionary psychology to also be a useful one in my own thinking about the wider contexts of popular EP. Although in principle the case of evolutionary psychology could be put into a wider historical context by comparing it not only with Sociobiology, but also with other instances of 'being Darwinian, at humans'[2], such an ambitious project would really belong in a different thesis. In addition, participants in the debate have had a running tendency to reconstruct the history of the area to their advantage. Opponents of EP trace its links to Sociobiology, through arguments linking race and IQ, back to social Darwinism and eugenics, whilst supporters emphasise a lineage from EP and sociobiology through ethology, primatology, palaeontology and evolutionary theory to

[1] This is how EP was described to me by one of my interviewees (Respondent 3 - academic author, evolutionary psychology, Darwin@LSE member: interview, 23/01/02).
[2] Examples might include earlier examples of evolutionary and ethological thought, paleoanthropology, primatology social Darwinism and eugenics, as well as Darwin and other Victorian thought in the area.

the Huxleys, Darwin himself and even before this. This fraught historical terrain is therefore probably best left alone for the time being, especially as my research is so closely focussed upon the evolutionary psychology episode of the 1990s. However, as I will discuss in Chapter Seven, evolutionary psychology and sociobiology are so closely linked that few practitioners can agree whether they are separate subjects or actually the same thing. Therefore, a closer comparison between the public controversy over Sociobiology in the 1970s and the public controversy of evolutionary psychology in the 1990s can be a useful and valid one.

In this chapter, I will attempt to tease apart and discuss in detail some of the political and cultural issues which were written about alongside and in response to the claims made by evolutionary psychology. Firstly, and most obviously, many EP stories utilised the 'hook' of discussing sex, sexuality and sexual attraction. Not always, but often, these stories would be couched in terms that fit with conventional stereotypes about these issues and were often about perceptions of beauty or other aspects of women and men's physical appearance. A second area of discussion was about the politics of gender more broadly, such as the 'sex war', family structure, the glass ceiling or rape, although the two strands were closely related, often within the same story. In order to clarify my discussions of these issues, I will be broadly sticking to the convention of using 'sex' to refer to the biological aspects of male-female differences, such as chromosomal sex, and to refer to issues of sexuality, while using 'gender' to refer to more political and social aspects of the discussion. However, as I will demonstrate in this chapter, the two are very closely intertwined in popular discussions, and at times it is impossible to make such clear distinctions, so in these kinds of contexts I will use 'sex/gender' to highlight this (e.g. Tong, 1989; p28).

Throughout the chapter, I will be outlining and juxtaposing the many different ways in which people have related evolutionary ideas to social and political issues, and I frequently refer to these as different kinds of evolutionary 'stories'. This terminology is not meant to imply that such stories are made up, even though it might initially sound like this. Instead, following the language used by the actors themselves, as well as in line with work in STS largely following Donna Haraway's studies of primatology (1986, 1989), I use 'stories' to highlight how knowledge in this area becomes constructed

centrally through the use of narrative (e.g. Caporeal, 1994; Latour and Strum, 1986; Rees, 2001). At the same time, as Haraway writes, all 'stories are not equivalently good' (1986, p80) and this is part of why arguments over evolution and humans become so fraught, and are so important. This literature has also shown how such arguments do indeed function as stories and myths about ourselves and how the appeal to nature has often been used as a way of arguing about society and politics, and how we should relate to one another. As Haraway puts it:

> primatology is a contested field within Western cultures for defining what it means to be human. As such, it is a major social practice for Western 20th century people to construct and negotiate the boundaries between human and animal, gender and sex, Western and other, culture and nature, whole and part.
> Haraway (1986; p87)

If primatology is so interesting because the study of primates provides us with allegories and mirrors for negotiating what 'human nature' might or might not be, then surely these issues can only be more acute for the study of human nature itself?

In this chapter, I will firstly detail some of the key claims that have been made in popular evolutionary psychology, concentrating on claims relating to sexuality and gender politics. This will include an outline of the basic theory of sexual selection; claims about differences between men and women; sex and beauty; relationships; and finally work in and outside of the home. I will then present an analysis of the media coverage of EP to show how such claims have been related to issues of gender politics in the 1990s such as the 'battle of the sexes', masculinity and the different forms of feminism present in today's society. Finally, I will look at the relationship between these claims and wider contextual issues such as the politics of power in this decade, the rising public prominence of biology and anxieties around the possibilities of wider social change.

5.2 THE CLAIMS OF POPULAR EVOLUTIONARY PSYCHOLOGY

So what kinds of claims do evolutionary psychologists make about the relations between men and women that attract such media attention and opposition from so many angles? In order for the later discussion in this chapter to make sense, a slight

digression into evolutionary theory is probably necessary, though I will try to keep it brief.

5.2.1 Males and females, men and women

Evolutionary discussions of relations between the sexes almost invariably start with some version of a basic story about the asymmetry of reproduction between the sexes.[3] Sometimes this will start with a discussion of the differences between male and female gametes (sperm and egg), at other times with the differences in how male and female mammals reproduce, but ultimately these stories all boil down to an issue of investment. Female humans or animals are seen as investing more resources in reproduction than males either because egg cells are much larger and less numerous than sperm cells, or because female mammals carry their offspring through pregnancy and often feed and care for them after birth, or for both reasons together. It is argued that males, on the other hand, 'invest' less in a single sperm cell and/or offspring, and so produce many more sperm cells and/or have the potential to produce many more offspring in a lifetime. Therefore, the argument goes, it is in a male's interests to attempt to mate and/or reproduce as often and with as many different females as possible. On the other hand, because the female 'invests' many more resources (mass of gametes, time, energy, food, etc.) in reproducing, she must be more discriminating about her partners (often described as being 'choosy' or even 'coy') and it is in her interest to only mate and/or reproduce with one of 'high quality'.[4]

This argument forms the basis of Darwin's theory of sexual selection (Darwin, 1871), and you will find it in any evolutionary based discussion of the relations between the sexes. Many of the claims made by evolutionary psychologists flow fairly directly from this theory, and often start with the conclusion that this asymmetry results in widespread differences between (human) men and women. Unlike the earlier arguments of sociobiology, which did have a tendency to be antifeminist, evolutionary psychologists instead stress their liberal credentials, arguing against feminist and social science theories

[3] Good, basic (and politically varied) explanations of this principle can be seen in Dawkins (1976), Ridley (1994) and Hrdy (1981, 1999). For an interesting take on such stories about egg and sperm cells, see Martin (1991).

[4] 'High quality' can mean a wide variety of things, from being physically healthy to having 'good genes'.

of sex/gender differences, while professing support for feminist goals. It is also around this point that evolutionary psychologists generally bring out the is-ought distinction (see Chapter Seven) to protect themselves from accusations of sexism (e.g. Pinker, 1998, p492).

However, this is not the only evolutionary story that can be told about relations between the sexes, in fact there have been many more versions than can be properly reviewed here. Arguments at the levels of gametes, animals, mammals and humans can be taken together, but also can be taken apart to show how sex determination is actually far more fluid and less 'natural' than is often made out.[5] In addition, simply because the argument of asymmetry works on one level (say, gametes), does not mean it will at another, rather this will depend upon the particular biology and ecology of the species in question. Work coming out of primatology, a discipline that has been changed hugely in the past twenty years by an influx of women into the subject often takes this as a start point for discussions of the issue. 'Darwinian feminists'[6] generally take the basic concept of asymmetry as read, alongside varying degrees of human sex differences, but then tell their stories from a female point of view. Among other things, these authors emphasise that in many species including our own, males contribute more than just sperm to their offspring, that sometimes males are choosy and females competitive, and that sex in primates (and by inference humans) is often not only about reproduction.

Importantly, Darwinian feminists also argue that the complexity and flexibility of primates and humans means that systems of sex relations vary wildly from species to species, within species and can also change with changes in the environment (Angier, 1999; Gowaty, 1997; Hrdy, 1999). They look more closely at the evolutionary interests of females, and argue how it can be in their (and their offspring's) interests to be promiscuous, to compete and co-operate with other females and males. Among others, the primatologist Barbara Smuts (1995) has also argued that the evolutionary interests of males to control female sexuality may have led to the origins of patriarchy. At the same time, other authors in this area take the basic story about asymmetry leading to sex

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[5] For example, many animals have radically different systems whereby sex is determined by environmental conditions, or even where males do not exist (see Crews, 1988; Fausto-Sterling, 1992; Ridley, 1993)
[6] This label comes from Fausto-Sterling, Gowaty and Zuk (1997, p409)

differences at face value, but instead turn it upon its head to argue that such differences can be intensely positive for women in the modern world, as women's better skills in networking and empathising can give them advantages in the modern workplace (see, e.g. Fisher, 1999; Etcoff, 1999).

5.2.2 Sex and beauty

Before continuing with this discussion, it may be of help to discuss some actual examples of the claims related to sex, sexuality and gender politics that have been made by evolutionary psychologists and others over the period of the popular EP debate. A good place to start, and one I often use when explaining what evolutionary psychology is, would be claims made about human sexuality, attraction and especially beauty. In 1995, one of the most eye (and headline) catching lectures at Darwin@LSE was one about the 'ideal' female figure. Dr. Devendra Singh asked men to give ratings of sketches of women with different proportions of waist to hip measurements. From this, it was concluded that the majority of men preferred a particular ratio between the two, described as an hourglass figure, on this basis described as a universal standard of beauty. It was argued that these were signals of evolutionary preferable traits such as youth, fertility and lack of pregnancy. This led to headlines such 'Sexual Power of the Waistline'[7] and numerous pictures of female waists and hips, including those of Anna Nicole Smith, Marilyn Monroe and Jayne Mansfield. The author Marek Kohn was present at the seminar, and describes the reception the talk got.

> I noted with interest that nobody seemed to object to the titillating undertow of the presentation. Across the Atlantic, the science writer John Horgan was also struck by the same lack of reaction when Singh showed his slides at a meeting of the Human Behaviour and Evolution Society. 'The headless woman in black leather panties has got to be the last straw,' he gasped, but protest came there none. (Kohn, 1999, p16)

The idea of universal standards of beauty is a recurring one, also expressed in research work on faces. These experiments utilise computer software to generate idealised faces from many pictures of real ones to produce averaged, symmetrical, 'masculine', 'feminine' or 'childlike' faces, which they then ask people to rate for attractiveness. This is again based on the theory that particular facial features, such as

[7] *New Scientist*, 22nd April 1995

symmetry or the proportions between the features, and often described as ideals of beauty, provide signals of mate quality.

'Masculine' (A) and 'feminine' (B) male faces. From: 'Women reveal their facial attraction' BBC News Online, 17th March 1999

Child's face 'morphed' with a woman's. Institute for Urban Ethology, University of Vienna
http://evolution.anthro.univie.ac.at/institutes/urbanethology/beautypro.html

"It's a widely established fact that people with baby faces evoke a protective instinct in other adults," says Dr. Glenn Wilson of the Institute of Psychiatry at London University. "And it's clear that the female face and body language have evolved to be more childlike in order to appeal to men. Part of that is an unconscious desire to share resources: it's the 'Protect me, share your catch with me' kind of thing. That may not sound politically correct, but that's biology for you." (Joanna Rahim, 'Halo, boys' The Sunday Times, 28th March 1999)

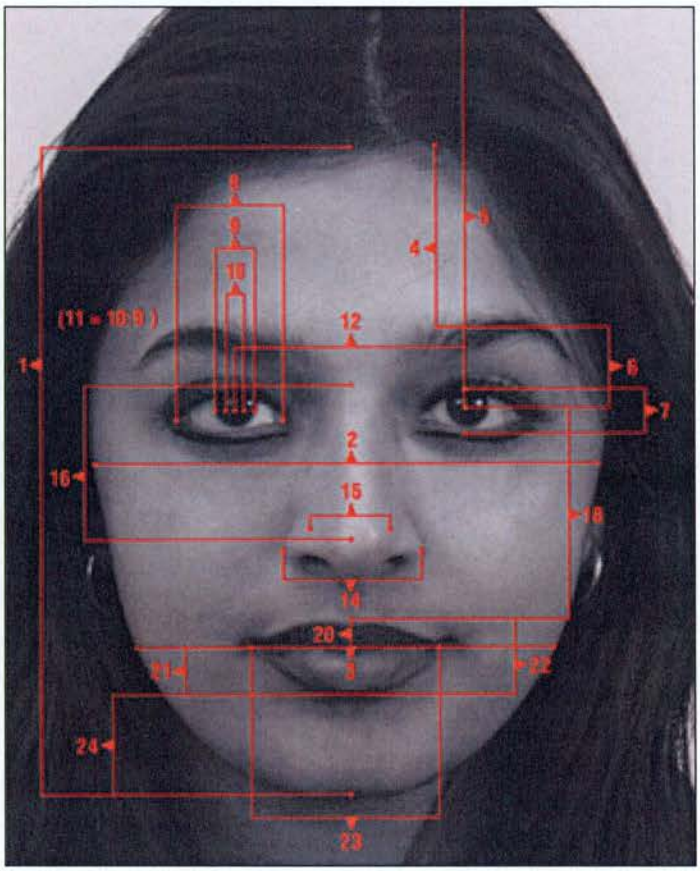

Image from '10', Cornford and Cross (1998)

These somewhat eerie images have appeared widely in the media and even inspired British artists Cornford and Cross in 1998 to put together an exhibition based on the idea. They organised a 'beauty contest' open to the residents of Derby, in which they took photographs of the contestants using facial recognition software and then used another programme to judge the faces according to these 'ideal' criteria of symmetry and proportion.[8] The ten highest rated images were then displayed in the exhibition.

[8] This exhibition was shown at Derby's Montage Gallery in the spring of 1998 and London's ICA in June/July of the same year. It was most recently on display in the United States in March 2003. See http://www.britishcouncil-usa.org/arts/whatson/mar03/cornfordcross_10_basekamp_mar03.shtml and http://www.basekamp.com/ for more information.

On a final note, the organiser of Darwin@LSE also used this research in a very direct way to raise her personal profile, that of the programme and of evolutionary psychology as a whole.

> A cut-out-and-keep guide to the academics whose phones are always ringing.
> No. 64 Helena Cronin
> Age: 54 Appearance: Tall, slim, blonde and, so far as Darwin was concerned, she says, the perfect female shape with 'an 0.7 waist:hip ratio' – the ideal Darwinian curve.
> (Peter Kingston, 'Celebrity scholars: Helena Cronin', *The Guardian*, 6th May 1997)

5.2.3 Evolution and relationships

A second broad area, perhaps the most widely reported one, could be broadly grouped together under the heading of differences between men and women within (hetero) sexual relationships. Most evolutionary psychologists have very little to say about other forms of sexuality other than heterosexuality, or indeed even the concept of any non-reproductive sexuality, largely because they struggle to find direct evolutionary reasons for non-reproductive sex (e.g. Pinker, 1998, p468, 473).[9] The tendency of popular evolutionary psychology to focus on heterosexuality in this way provides a good demonstration of the power of stories in discussions of human nature, as well as of Judith Butler's (1989) ideas about how 'heteronormativity' is performed in society.

The publication of Robert Wright's *The Moral Animal* (1995) was heralded by a flurry of stories reporting his arguments that we are evolved to be unfaithful to our long term partners. As Wright put it in a piece in the *Daily Telegraph*,

> The good news is that human beings are designed to fall in love. The bad news is they aren't designed to stay there. According to evolutionary psychologists, it is 'natural' for both men and women – in some circumstances – to commit adultery or to suddenly find a spouse unattractive or irritating. It is similarly natural to find an attractive colleague superior to the sorry wreck of a spouse you're saddled with.
> (Robert Wright, 'Just doing what comes naturally' *Daily Telegraph*, 20th August 1994)

However, other evolutionary psychologists have argued for some quite different versions of this particular corner of sexual politics. So Matt Ridley can argue that "man

[9] However, there may well be more indirect evolutionary pressures involved here: for a slightly more thoughtful view from evolutionary psychology, see Miller (2000, p217-9). For other views and evidence from studies of animal behaviour, see also Bagemihl (1999) and Vasey (1995).

is a naturally faithful creature", forming 'pair bonds' to bring up children[10], while Robin Baker describes the 'sperm wars' brought about by female infidelity[11]. Alternatively, the anthropologist Helen Fisher argued that 'there was an innate four year pattern to courtship, marriage, adultery and divorce',[12] while evolutionary biologist Tim Birkhead's (2000) popular book described the evolutionary pressures leading to women's promiscuity.

Despite the variety in these accounts, they all share the underlying implication that relationships between men and women are all about balancing the (selfish) interests of the individuals involved. This is a very important idea which runs right through this entire area in both academic and popular discussions. To an extent this is set up by the basic 'story' of sexual selection described above, but as I will describe here, it has also been taken up and elaborated in much of evolutionary psychology. The following discussion by Steven Pinker, in an extract from *How The Mind Works* serialised in *The Guardian*, illustrates this view by describing the 'marketplace' of finding a partner.

> Unsentimental social scientists and veterans of the singles scene agree that dating is a marketplace. People differ in their value as potential marriage partners. Almost everyone agrees that Mr. or Ms. Right should be good-looking, smart, kind, stable, funny and rich. People shop for the most desirable person who will accept them, and that is why most marriages pair a bride and groom of approximately equal desirability. (Steven Pinker, 'A mind to love' *The Guardian*, 17th January 1998)

In addition, the story of sexual selection sets up and feeds into a story about 'the battle of the sexes', where the two sides are seen as fundamentally different, as well as fundamentally opposed. Evolutionary psychologists argue that because of the evolutionary pressures of sexual selection, men and women behave differently in relationships and want very different things from their partners.

In keeping with this, EP research claims that, "all over the world, it's still a case of is she good looking and has he got the money?" (Robin McKie, 'Take your partners for a Stone Age ritual', *The Observer*, 30th April 1995). Research asking (heterosexual) people what features they would look for in a partner found that men were more likely to cite

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[10] Matt Ridley, 'The marrying kind', *Sunday Telegraph*, 21st May 1995.
[11] Robin Baker (1996) *Sperm Wars: infidelity, sexual conflict and other bedroom battles.*
[12] John Harlow, 'Women programmed for four-year love affairs' *The Sunday Times*, 28th November 1999.

features such as youth and beauty (signals of fertility), while women had preferences for older, richer, socially dominant men (better resources for children). Other differences cited were more concerned with sexuality, as seen in EP studies where men were found to be more likely to say yes to a request for casual sex from a stranger than women. Men are also said to be more likely to be upset at the thought of their partner's sexual rather than emotional infidelity, while women were more likely to feel the opposite way. All of these effects are argued by many evolutionary psychologists to be a direct consequence of the evolutionary pressures of sexual selection, which they hold to be directly opposed to feminist and social science explanations invoking social learning, social conventions and patriarchal cultures (see, e.g., Buss, 1994). The following image, taken from a special issue of *Demos Quarterly* about evolutionary psychology,[13] illustrates the story rather well.

[13] This publication, and the think tank associated with it, is discussed at greater length later in the chapter, in section 5.4.1

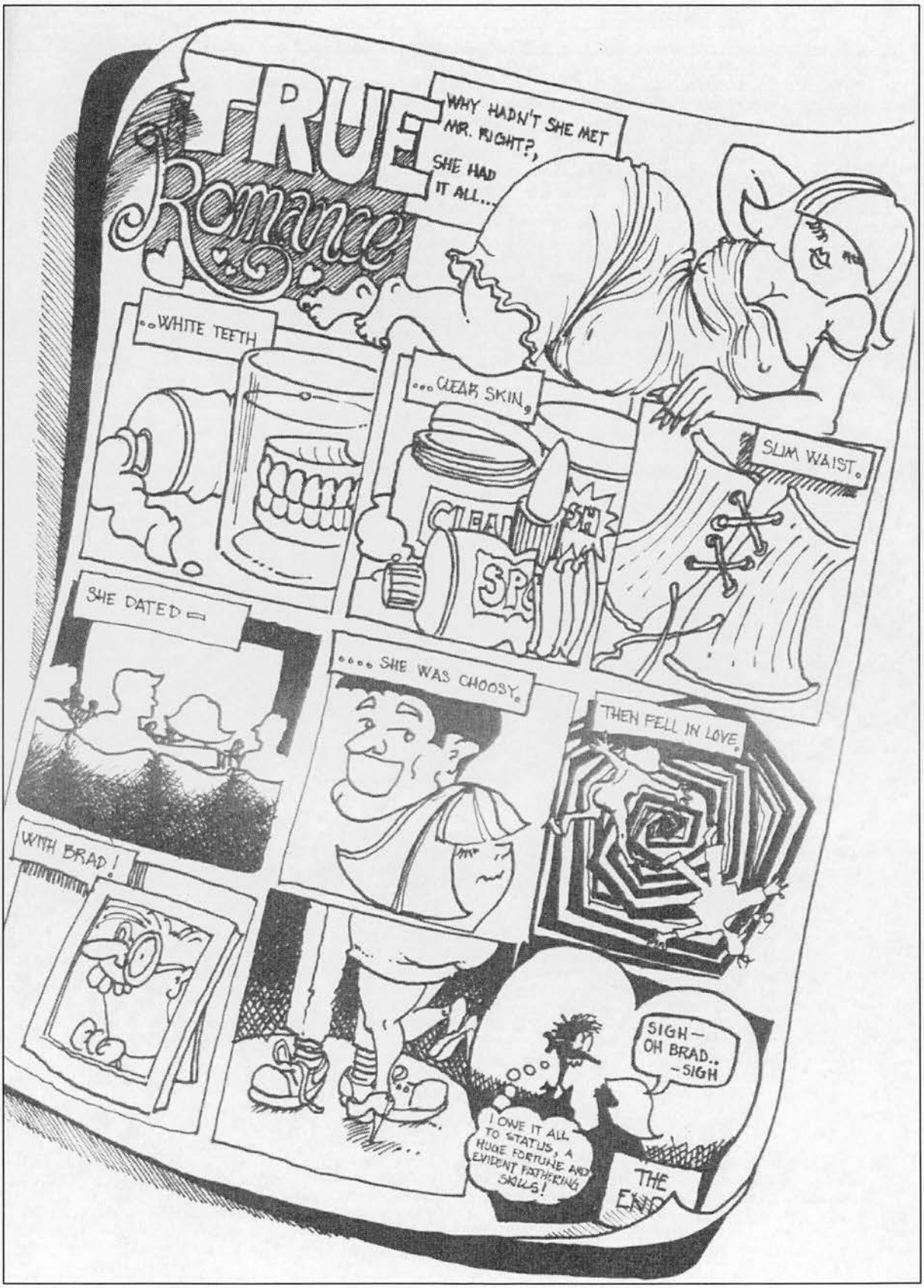

Image from Buss (1996) Demos Quarterly, Issue 10, p14

As can also be seen from the following media quote, evolutionary psychologists' assertions that it is a mistake to derive an 'ought' from an 'is' tend not seem to make much difference to people in everyday life:

> Talking to an ageing Don Juan the other day, I was struck by his sudden defence of his behaviour, "It's in our genes," he said comfortably, "I could impregnate every woman in this room, but you couldn't have a child with every man in this room. So men evolved to be really, really promiscuous."
> "And doesn't that make you feel good," I said. "Sure," he said happily.
> (Natasha Walter, 'Roses are red, violets are blue. So what?' *Independent*, February 14th 1999)

Perhaps the most extreme form of this argument was seen in an evolutionary psychology explanation of male on female rape in humans (Thornhill and Palmer, 2000). Extending the above argument about the differing sexual natures of men and women, Thornhill and Palmer proposed that rape was a 'sexual strategy' utilised by young, low status men who stood little chance of finding a partner consensually. Even more overtly, they strongly attacked feminist arguments that rape is about men asserting power and dominance over women.[14]

The basic narrative of sexual selection was also utilised in a wide range of stories and claims about differences between men and women, as is neatly paraphrased in the following quote.

> the reason that a man's wife or mother or wife's mother or son's girlfriend is more likely to know where the marmalade is kept, is that hundreds of thousands of years ago, when our ancestors were hunter gatherers on the great plains of Africa, the men were out hunting, while the women hung around the camp digging up roots and berries and arranging them in neat piles.
> (Nigel Williams, 'I want to be alone', *Independent*, November 24th 1996)

Other, more specific areas of sex difference associated with EP claims in the media have included propensities for women to be better gardeners, worse map readers, better at relating to other people, more likely to gossip and less likely to take risks than men.[15]

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[14] The implications of these arguments for boundary-work and disciplinary rivalries will be discussed in detail in Chapter Seven.

[15] See, e.g., David Derbyshire, 'Why women are born to be the best gardeners' *Daily Telegraph*, 14th April 2000; Aisling Irwin, 'If we're different, it's for the same reason' *THES*, 4th January 2002; Helena Cronin, 'It's only natural: the biological differences between men and women are no threat to feminism' *Red Papper*, March 1999.

5.2.4 Families, work and the home

Such claims about the evolutionary origins of sex differences have frequently led to further discussions and claims that directly tackle the implications of evolutionary psychology for contemporary gender politics. Building upon the work on sexual selection and sex differences outlined above, several authors have engaged with what these ideas might mean for families and work, both in the home and at the workplace, and the implications of this for changes wrought by feminism. The following picture illustrates well the most basic evolutionary psychology story, in which the need for men's help in protecting and providing for children for many years leads to monogamy and the development of the nuclear family.

Image from Dylan Evans and Oscar Zarante (1999) 'Introducing Evolutionary Psychology', p114

As described above, a major theme in popular evolutionary psychology is the evolutionary basis of heterosexual relationships. Within this discussion came a significant current of speculation about the causes of relationship breakups, specifically in the context of adultery and divorce. As well as the 'naturally adulterous or promiscuous' arguments outlined above, other suggestions included the idea that people 'trade in' their partner for someone else of higher quality (generally younger and/or prettier). In the case of men, it was argued that this would lead to divorce and remarriage, whereas women were argued to be more likely to deceive their current partner into supporting children conceived with somebody else. This concern with adultery and divorce was reflected in stories reporting EP work which 'identified the key personality traits of adulterers', drawn up in a 'Love Cheats Check List' for readers.[16]

Evolutionary psychologists have also argued that another major cause of divorce comes when women earn more, or are in higher status jobs than their partners. So Helena Cronin and Oliver Curry of Darwin@LSE wrote, in a foray into policy advice:

> Thus, however valuable the promotion of women at work as an end in itself, the government should be aware that there might be a conflict between its stated policy goals of "enhancing financial independence especially in women" and achieving "fewer broken relationships between parents".
> (Helena Cronin and Oliver Curry, 'Pity poor men' *The Guardian*, February 5th 2000).

On top of this, other EP research suggests that the consequences of divorce and remarriage are very bad for children. Canadian psychologists Martin Daly and Margo Wilson's research (e.g. Daly and Wilson 1998) drew upon the well known effect that children with a step-parent were far more likely to suffer from abuse and neglect than children living with both their natural parents. Like other examples of EP research, this finding could be interpreted in a number of ways, and many researchers argue that social and financial factors could result in this effect. Instead, Daly and Wilson argued that because step-parents are not genetically related to their step-children, they will be less motivated to care for them, or to prevent themselves from hurting such children.

Other evolutionary psychology arguments related more directly to the different kinds of work that men and women do, both in the home and at the workplace. Broadly,

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[16] Cherry Norton and Chris Hastings, 'Telltale signs that betray the adulterer' *The Times*, 21st September 1997.

speaking, the EP model of the sexual division of labour is based around men providing for and protecting their children in a family unit with women doing the 'caring' work. Leading out from this, evolutionary psychologists argue that men are more aggressive, competitive and likely to take risks, while women are more empathic and sociable, with better communication skills. Although several evolutionary based popular authors have written explicitly about the implications of these differences for domestic work and caring work,[17] no one directly associated with EP has actually tackled the issue. However, American professor of law Kingsley Browne (1998) adopted an evolutionary psychology perspective to look at issues of gender inequality in the workplace. He argued that the underlying reasons for the continuing problem of the 'glass ceiling' in workplaces were rooted in biology. These gender differences mean that men will seek out higher status more aggressively, leading to them progressing up the career ladder more quickly and successfully than women. In addition, these differences lead to the domination of certain professions, such as nursing or firefighting, by one sex or the other. Therefore:

> Since human nature is not going to change soon, a policy goal of full parity between men and women is unrealistic. Such parity could be achieved, if at all, only through huge government coercion and a great cost in lost wealth and human freedom.
> (Kingsley Browne, 'Segregation of the sexes is here to stay' *Financial Times*, October 10th 1998)

These more conservative versions of the evolutionary story of work and the family were somewhat balanced by Darwinian feminist stories, largely represented in the public domain by the work of the American science writer Natalie Angier (1999) and the sociobiologist Sarah Blaffer Hrdy (1999). Although media coverage of Angier's book concentrated on her arguments about EP and human sexuality, she also had some choice words to say about evolution and the family.

> There is a division of labour by sex. But in hunting, the men are not engaging in the most calorifically productive enterprise. In many cases, they would be better off gathering, or combining an occasional hunt with the trapping of small prey. The big hunt, though, is a big opportunity to win status and allies. The women and their children in a hunter-gatherer society clearly benefit from the meat that hunters bring back to the group. But they benefit as a group, not as a collection of nuclear family units, each beholden to the father's personal wildeburger.
> (Natalie Angier, 'How is it for you?' *The Guardian*, 29th March 1999)

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[17] See, e.g. Anne and Bill Moir (1998) *Why Men Don't Iron: the real science of gender studies.*

Angier utilised work carried out in evolutionary anthropology to argue that, instead of dependent children being provided for by fathers, grandmothers and other female relatives help mothers in bringing up their children. The implication in Angier's text of somewhat useless males, off hunting to 'win status and allies', is a theme I will return to later, but it is worth noting here that the basic story of differences and divisions between men and women is largely intact in Darwinian feminism. Continuing with this line of argument, Sarah Blaffer Hrdy's book *Mother Nature* (1999) explored this version of the evolutionary family in much more detail. Described in one book review as 'A biological justification for working mothers',[18] Hrdy's work takes apart the idea that human mothers do not work outside the home and again draws upon ideas about relatives and others helping with childcare by becoming 'allomothers' to children.

In these past few sections, I have reviewed some of the claims made by and around popular evolutionary psychology during the 1990s that were relevant to issues of gender politics. I grouped them broadly into three categories: claims about our perceptions of beauty, about men's and women's sexuality and the relationships they have with each other, and about different versions of the evolutionary family and workplace. This is not and is not meant to be an exhaustive list, as other EP claims have appeared which I did not discuss, as well as claims that had nothing to do with gender. I hope I have also showed that claims made by evolutionary psychologists covered a fairly wide spectrum of opinion. Having done this, I will now attempt to place these claims and counter claims into the wider context of discussions of gender politics taking place in the UK in the 1990s. In doing this, I will show how these discourses about evolution, sex and gender have drawn upon and fed into a wider debate about the relationship between men and women taking place at the time, a debate still ongoing as we move into the 21st century.

[18] Gail Vines, *Independent*, 21st January 2000

5.3 "FEMINISTS, MEET MR. DARWIN": EVOLUTIONARY PSYCHOLOGY AND GENDER POLITICS

"Feminists, Meet Mr. Darwin" is the title of an article by the author Robert Wright[19] published around the time that his book *The Moral Animal* (1994) came out in the USA. As the title suggests, Wright attacked feminists (as a group) for refusing to acknowledge the 'truth' about human nature as regards relations between men and women. In a similar vein, the evolutionary psychologist Steven Pinker writes in his 1998 book *How The Mind Works.*

> These [feminist] kinds of arguments combine bad biology (nature is nice), bad psychology (the mind is created by society) and bad ethics (what people like is good). Feminism would lose nothing by giving them up. (Pinker, 1998, p493)

This kind of opposition is often the most immediate perception of the relationship between evolutionary and feminist thought, leading to headlines such as, 'New book pits feminists against Darwinians' (*The Observer*, 21st March 1999). However, as I will explore in this section, this kind of representation of feminist and feminism as some kind of unitary movement is utterly fallacious, and can even be seen as such by looking at the varied gender politics within evolutionary psychology, as I reviewed in the last section.

'Feminism' as a political and intellectual movement has in fact always been extremely diverse, indeed there is another (mostly unfounded) perception that feminists have had a tendency to spend more time arguing with each other than they do convincing the rest of the world of the rightness of their cause. There are (among others): first wave, second wave and third wave[20] feminists; liberal feminists, socialist feminists, Marxist feminists and radical feminists; postcolonial, postmodern, poststructuralist, psychoanalytic and even allegedly post-feminists. One of the most central tensions in feminist thought has been that between the goal of social equity between the sexes, and that of working to improve the position of women in society. Although at first glance the two might not seem to be that different, they can often come into direct conflict.

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[19] Robert Wright 'Feminists, meet Mr. Darwin', *The New Republic*, 28th November 1994.
[20] See, e.g. Catherine Redfern 'Pick 'n Mix Feminism' *the f-word*, 16th May 2001 and other discussions at http://www.thefword.org.uk/index.live.

For example, a campaign for identical working conditions between women and men employees might result in a workplace that takes no account of the likelihood in practice of women's extra caring responsibilities, or need for leave during pregnancy and childbirth without risking their careers. Other, 'essentialist' or radical feminists have taken this argument further and argue that women are different to men in many ways that are intensely positive, and an embracement of these kinds of positive, caring attributes can be positive for women as well as the rest of society (see, e.g. Tong, 1989, ch. 4). The need to recognise the differences amongst women, rather than assuming that all women will share the concerns of white, heterosexual middle class women, has also been very important in debates within feminism. In particular, it has been argued that perspectives taking account of the different needs of women of different class, racial and global perspectives are vital to being able to continue furthering the position of women in society (see, e.g. Weedon, 1999).

Having reviewed some of the popular claims made about evolution, sex and gender in the 1990s UK, I will now try and sketch out the wider context of media discussion about these issues. The above claims were not made in a vacuum, but instead emerged within a context of discussion about the continuing role of feminism in British society. Although some of this is explicitly conducted as discussion of 'gender politics', the majority of it exists as part of a wider discourse about sex, men, women, and relationships in the 1990s. In many ways it is actually this broader, largely 'apolitical' stream of discussion that sheds most light on how people are dealing with ongoing changes in gender roles, and how EP claims relate to these issues. Despite the frequent separation of discussions of sexuality and gender politics by the media, I will be discussing them together, as ultimately they have been concerned with the same issues, but have simply dealt with it in different ways. I have grouped these discussions into three broad areas which have been of importance to the gender politics of the 1990s: the 'battle of the sexes' between men and women; men and masculinity; and the ways in which diversity in both feminisms and Darwinisms have co-opted each other over this time.

5.3.1 'Mars and Venus': the battle of the sexes

In early 1998, evolutionary psychologist Steven Pinker commented on the then-breaking scandal that US President Bill Clinton had had an affair with a young White House intern, Monica Lewinsky. In an article in the American magazine *The New Yorker*, Pinker argued that the affair was entirely consonant with 'ancient Darwinian rationales', citing evolutionary psychology research on powerful promiscuous men and young women.[21] Pinker continued in a similar vein in this interview piece:

> "Most men really do care about their marriages, but then most men don't have the opportunities he has had. Who know what they would do if they had young White House interns throwing themselves at their feet? For most of us, it's never an issue." What though, of the women involved in the Clinton trysts? It is, of course, the power that attracts. [...]Pinker says, though, that Hillary may well have made her own calculations. "In many ways, women are more willing to share a man than men are to share a woman – look at the number of societies on earth, for example, where you find polygamy. They'd sometimes rather be the second or third wife of a rich man than the first choice of a pauper."
> (Andrew Collier, 'Poor man, he can't help himself' *The Scotsman*, 27th January 1998)

This was echoed by other Darwinians in both the US and UK press, with journalist Robert Wright writing in a special issue of *Time* magazine about the affair and Richard Dawkins writing a commentary piece in Sunday newspaper *The Observer*.[22] Although as ever, these writers were keen to deny that the Darwinian position justified Clinton's behaviour, there was nonetheless a strong subtext that he 'couldn't help it'. Writing later that year, the *Guardian* columnist Polly Toynbee argued against this implication that it was simply biology that led in Clinton's actions, writing: 'Humans don't know who they are, or what's 'natural.''[23] The linkage between Darwinism and Clinton was not only made by the evolutionary psychologists themselves, but by several other commentators as well, who tended to add in other, looser concepts, such as these from primatology.

> He's [Clinton] the silverback Alpha-male of the tribe and so it is hardly surprising that he might succumb to an atavistic impulse to both confirm and display his ascendancy by sexual conquest.
> (Tom Sutcliffe, 'What can our DNA tell us about sex in the Oval Office?: Evolutionary sexology', *Independent*, January 26th 1998)

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[21] Steven Pinker, 'Presidents Behaving Badly', *The New Yorker*, February 9th 1998.
[22] Robert Wright, 'Politics Made Me Do It', *Time* magazine, February 2nd 1998; Richard Dawkins, 'Sex and Power' 22nd March 1998, *The Observer*.
[23] Polly Toynbee, 'Birds do it, Bill does it', *The Guardian*, 16th September 1998

The description of Bill Clinton as some kind of ideal 'Darwinian man' was a recurring one that first turned up long before the Lewinsky affair and continued afterwards, doubtlessly helped by the episode. This is both in terms of Clinton as an exemplar of one form of 1990s hegemonic masculinity (Connell, 1995) as well as a personification of the links between evolutionary psychology and the centre-left politics coming into and holding power in the US and UK at the time.

Perhaps the most immediate and obvious theme about gender running through and around popular discussion of EP was that of the 'battle of the sexes'. As described above, the basic evolutionary story of sexual selection is a compelling one to many, in which males and females (read as men and women) are described as being fundamentally different, as well as fundamentally opposed to one another. Although in some ways this is an extremely old story, it is also one which has had particular resonances in the 1990s. Often when discussing the concept of sexual selection, commentators referred to it precisely as the evolutionary or prehistoric 'battle of the sexes'. As well as feeding into traditional positive/negative stereotypes of men and women, the story of sexual selection also works well with more contemporary narratives about the sexes. These see men and women as very different, but don't necessarily link such a view to sexism or misogyny (as in essentialist feminism), or indeed gender politics at all. Instead, the sexes are seen as different, but of equal value, or such differences can be turned on their head to value women and put down men. This kind of narrative provides the media with an ongoing and plentiful source of material, as described here by a journalist who often writes in the are of gender issues:

> So the media like these polarisations [between men and women] and they like 'sex war', the like the idea of the sex war. Kathy Lette [a novelist] says, "Women have a better sense of humour than men." I says, "No! Men have a better sense of humour than women!", you know, "Men are funnier than women." Discuss. "Women are funnier than men."
> (Respondent 9 - freelance journalist: interview, 18/01/02)

In this kind of view, the problems that men and women have in relating to one another can therefore be attributed to such differences, which cannot be changed, but must somehow be overcome with difficulty. The 1990s saw the publication of several popular psychology and self-help books on this theme, most famously *Men are from Mars,*

Women are from Venus (Gray, 1992), a bestseller in both the UK and US. Many of these books mobilised some kind of biological cause for such sex differences, sometimes by the way of neurobiology or hormones, and often mobilising some form of Darwinian reasoning as an ultimate explanation.[24] Similarly, sex differences have been a source of humour for many years, and much of the media discussion has been carried out in a humorous or lighthearted manner. Again, the difference in the 1990s is that rather than such jokes being told by men to men about women, women *also* tell them to women about men, in public. A good example of this can be seen in the following image, which could equally well be seen as a joke at men's or women's expense, and indeed I have seen versions of it on both 'men' and 'women' humour websites.

Joke image circulated and received on email during 2001

However, this kind of humour often illustrates and can be used as a defensive shield in politicking between men and women, particularly around the thorny issues of relationships, and often in this context the tone gradually moves from mutual teasing

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[24] See also Anne and Bill Moir (1998) *Why Men Don't Iron: the real science of gender studies*, and Barbara and Allan Pease (1999) *Why men don't listen and women don't read maps.*

into active hostility. In particular, the 1990s saw a good deal more of such humour coming from women's point of view. A group of fictional representations of single women appeared during the late 1990s, such as the British book *Bridget Jones's Diary* (Fielding, 1996) and the American comedy drama series *Ally McBeal* and *Sex and the City*. With some variations, these were (and are) themed on the 'plight' of the single, professional woman looking for a good relationship (sometimes idealised as marriage, sometimes not).[25] *Bridget Jones* was based around a character in her 30s and in the media this was sometimes linked to evolutionary psychology research about relationships between older men and younger women (and inferred lack of vice versa). There were other links between EP and these comedies: the early appearances of EP on UK television, *Why Men Don't Iron* (1997) and *Anatomy of Desire* (1998) were both screened by Channel Four alongside the mid-late evening slots given to *Ally McBeal* and *Sex and the City*.[26] This kind of humour is also important in a context of discussing relationship failure, adultery and divorce, often here taking the form of one-line jokes, as well the fictional presentations. As we have seen, evolutionary psychology first broke into the UK media on the back of Robert Wright's arguments about the evolutionary basis of adultery, from his book *The Moral Animal* (1995). The novelist Celia Brayfield, writing in the news magazine *New Statesman*, discussed exactly this issue.

> Women circulate jokes about men the whole time. There is an entire samizdat of emails, faxes and web pages filled with dodgy wit such as, "Why did the man cross the road? Because he couldn't get his cock out of the chicken." Much as I like a laugh, I can't take this tone of humour. It sounds like a gender vendetta. The tone s precisely the same rabid hostility that you hear in the misogynist literature of less enlightened times, the rants that made Germaine Greer ask: "Do women have any idea how much men hate them?"
> (Celia Brayfield, 'No hanky-panky on Olympus', New Statesman, 19th June 2000)

Later in the same piece, she linked this kind of humour with the sexual politics of the 1990s, as well as with evolutionary arguments on the subject:

> Perhaps, for straight men, we are still in the golden age of promiscuity. Pregnancy is no longer a problem, not so much because of contraception as because men reason that, with equality, women can bring up children on their own. Lad culture has promoted the growth of a callow and selfish concept of masculinity in which it is considered unmanly to take responsibility for anything. We have the biological determinists to explain that men are "hardwired" to want sex with as many partners as

[25] See also the bestselling American self-help book *The Rules* (1995), by Ellen Fein and Sherrie Schneider.
[26] I was slightly horrified during 2001 to stumble across a direct reference to the evolutionary psychology facial preference research described in section 5.2.2 in an episode of *Ally McBeal*.

possible and to kill each other to get it. Male fidelity is an evolutionary impossibility, according to writers such as Tim Birkhead, whose recent book, Promiscuity…
(Celia Brayfield, 'No hanky-panky on Olympus', New Statesman, 19th June 2000)

5.3.2 Men and masculinity in the 1990s

This commentary also highlighted the other side to this kind of discussion of the 'sex war' – the viewpoints of, and wider views on, men's engagement with these issues. Just as evolutionary psychology had plenty to say about women, it had as much, if not more to say about men, and this was also picked up on in media discussions of the subject. The stereotypical 'evolutionary psychology' depiction of men as (among other things) sex obsessed, violent risk takers was one that seemed to strike a chord with commentators writing in the media about men and masculinity in the 1990s. Much of this stream of commentary was directly engaged with what has often been described as 'the crisis of masculinity': broadly speaking, how men are engaging and coming to terms with (or not) the changes in gender roles brought about by feminism in our society. Reflecting the wider debate in this area, there were two main ways in which evolutionary psychology was brought into such discussions. Broadly speaking, the first of these would invoke EP to confirm, affirm or even celebrate the validity of more traditional forms of masculinity, while the second would take a more disapproving or anxious tone to discuss the ways in which men are or (aren't) adjusting to changes in gender roles.

This kind of 'affirmation' narrative was quite prominent in the discussions of the Lewinsky affair, where there was a certain vein of admiration for Clinton's sexual conduct, particularly as expressed in the descriptive phrase 'alpha male'. This kind of affirmation of such a form of male sexuality can also be seen in the exchange quoted above in section 5.2.3, where an 'ageing Don Juan' uses Darwinism to justify his behaviour to the female writer. It was also an important part of the aforementioned 'lad culture', based around the success of several men's magazines devoted (it seemed) to beer, football and semi-naked girly models in a kind of back reaction to feminist objections to these things. Perhaps unsurprisingly, EP was specifically linked to lad culture on many occasions, as seen in this quote:

Arena, the men's magazine, has just excitedly informed its readers that they are slime. "You lie – you cheat – you get it where you can – and you still want to live happily ever after!" crows the cover line. […] Thank heaven few women ever consult men's

> magazines, even of this relatively respectable variety. It's not so much the unreliable statistics that are offputting, but the tail-wagging tone in which they are presented – good old Fido's done it again, the rascal, the loveable mutt. But then it is equally fortunate that few women have been investigating the even more alarming information about men and women and the differences between them now being supplied by the rapidly advancing field of evolutionary psychology.
> (David Sexton, 'Don't blame me, it's my sex drive', Evening Standard, 13th August 1998)

A slightly different incidence of Darwinian arguments being used to affirm traditional forms of masculinity can be seen in a Matt Ridley commentary about the film *Fight Club*, arguing that men's violence 'goes with the grain of nature'.[27] Other, looser examples could include columnist Andrew Sullivan's writing about his experiences of injecting testosterone,[28] citations of Darwinism by antifeminist American 'sex gurus' (who advise men on how to 'win' in the dating game)[29] and the following piece about the 2000 UK fuel crisis.

> To deprive 21st century man of the use of his car is as worrying to the individual as it would be to cripple a Stone Age man by injuring his legs. Anything that could threaten, however remotely, the stability of a family, and therefore its survival, engenders all sort of fears. Without petrol will the breadwinner, or winners, still be able to go to work, and earn the money to keep the family?
> (Dr. Thomas Stuttaford, 'Stone Age man would understand the urge to hoard' *The Times*, September 13th 2000)

As a final exemplar, this piece even juxtaposed different versions of Darwinian stories about gender relations (described in section 5.2.1) directly as *men's* and *women's* evolutionary stories.

> If you are a man, your chest probably puffs imperceptibly when you read about the current wisdom of evolutionary psychology. You know the story: how you can't help being aggressive and promiscuous because that is what made your hominid ancestors successful all those millions of years ago on the African savannah. However, it is my sad duty to induce a littler deflation. The latest findings have man-the-sexy-hunter exiting stage left, pursued by the new Amazonian woman.
> (Jerome Burne, '... and women can be more macho, too: Husbands may be useful, but when it comes to foraging for survival, grandmothers may be more important.' *Financial Times*, April 17th 1999)

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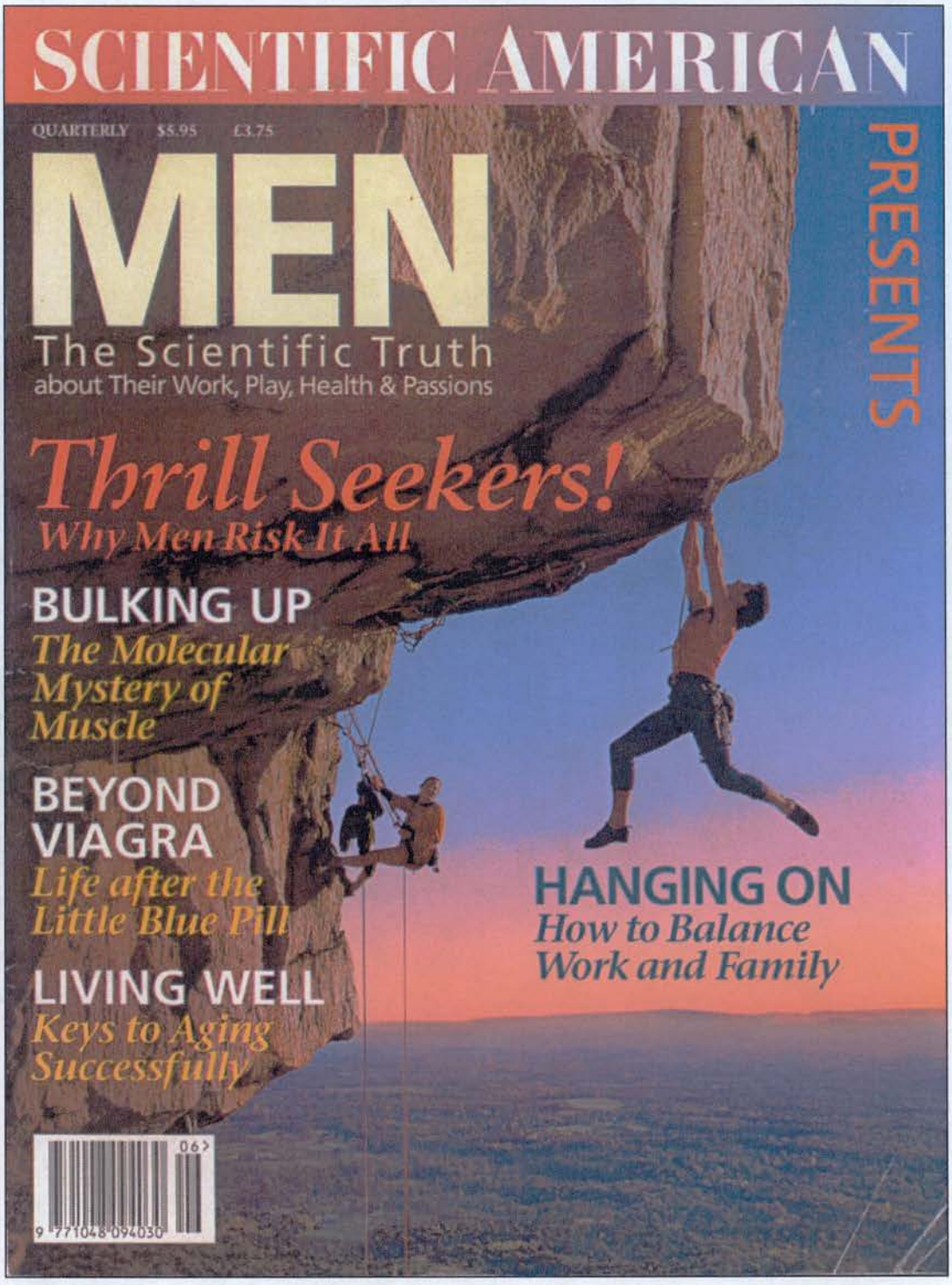
[27] Matt Ridley, 'Violence: let it all out or keep it buttoned up?', *Daily Telegraph*, 14th September 1999.
[28] Andrew Sullivan, 'Mainlining manhood' *The Guardian*, 8th April 2000.
[29] Cited in this article as similar to a character played by Tom Cruise in the film *Magnolia*: see Christopher Goodwin, 'Seduction is a trial for the older sex guru' *The Sunday Times*, 23rd January 2000.

A second stream of discussion turned these arguments on their head to instead portray men in a negative light, and as with the 'men jokes' discussed above, to utilise EP and other scientific findings in bemoaning men's shortcomings. Darwinian and Darwinian-esque characterisations of men as unable to commit in relationships, clean up, communicate with others or do more than one thing at a time were disparaged alongside other 'traditional' masculine traits such as tendencies to violence, restlessness and ambition.

> No specialist has yet been able to establish why scientific findings invariably reveal men to be limited, hopeless creatures in thrall to an inferior caveman biology whereas women invariably emerge from tests as nicer, more intelligent, versatile and emotionally mature than their male counterparts. [...] Is it time for the genetically inferior modern male to be enhanced like the tomato? The man from Monsanto, he say yes.
> (Terence Blacker, 'Slobbing out beside the gene pool', *Independent*, July 14th 1998)

Within this, some commentators took a more reflective stance to look at men's adjustment to changes in gender roles, or to look at why men or masculinity were seen as less important or less valued 'these days'. These were often closely associated with discussions of the so-called 'crisis in masculinity'. In 1999, an entire issue of the *Observer* magazine was devoted to the issue, including articles about the problems of bringing up boys, girls outperforming boys in school and a short piece on the biological and evolutionary basis of sex differences. The cover showed a naked baby boy with the headline 'Oh dear, it's a boy. But is that really such bad news?', while the piece on sex differences highlighted the following quote, 'Men usually attack certain problems by using only one side of their brain, while women use both sides.'[30] In 1999 *Scientific American* produced a special issue entitled 'Men: the Scientific Truth', which included several evolutionary psychology based articles. The cover, reproduced here, shows a man heroically clinging to a rockface by his fingertips, but the article headlines betray anxieties about masculinity with references to Viagra, ageing and 'work-life balance'.

[30] Robin Mckie, 'Girl power' *Observer Magazine*, 20th June 1999.



Cover of Rennie (ed.)(1999) 'Scientific American' special issue

This collection of image and headlines brings together the 'positive', the 'negative' and the 'anxious' narratives about masculinity, biology, gender politics and the 1990s into

one place, and is therefore a useful resource for illustrating how they are intertwined in most discussions of the area.

5.3.3 Diverse Darwinisms, multiple feminisms

Ultimately, these varying discussions about men, women and evolutionary psychology can be seen as attempts to get to grips with the social changes brought about by second-wave feminism and other social changes since the 1960s and '70s. Although at the beginning of the 21st century, perceptions that we have "achieved equality" are unfounded and there are still many problems with prejudice in its many form, it is certainly true that British society has changed hugely over the second half of the 20th century. Traditional divisions of labour have been strongly eroded, with women's opportunities for education, work outside the home and fulfilling careers vastly expanded, while it has also become more desirable and acceptable for men to take on childcare and domestic work in the home. Morality and sexual politics have also changed, with divorce becoming acceptable and far more common, as well as increasing numbers of heterosexual couples choosing not to marry in the first place. Constraints on sexuality in general have loosened greatly, with sex outside of marriage seen as more acceptable and other forms of sexuality moving into public visibility, particularly in terms of women, gay and bisexual people actively expressing sexualities that had previously been suppressed.

However, this state of affairs is in a state of high flux, with many groups and individuals involved in an ongoing debate, arguing over not only what is right and should happen, but also what has happened and what such changes mean for our society. Such discussions were also reflected in the interview comments when I asked about EP and gender politics. Amongst those who were generally opposed to evolutionary psychology, there was a shared view that it was an attempt to use biology to reassert traditional gender roles.

> Particularly in times of intense gender crisis, the world has searched for the certainties of sexual difference to say, well it may appear that everything is changing, (because everything is changing), but let's pretend it's not, and what's more, let's even pretend it *can't!*
> (Respondent 20 - academic author, feminist, sociology, psychology: interview, 01/08/01)

Other people did not 'blame' evolutionary psychology in quite this way, but instead felt that its arguments had a contribution to make in such debates, as people attempt to understand and come to terms with these changes.

> We're also in a massively destabilised era of social relations, and we're all trying to find out ways of putting the bits all back together again.
> (Respondent 11 - popular science publishing PR: interview, 28/07/01)

Still others did not dispute the EP line on gender and sexuality, but expressed anxieties about the effect upon gender politics all the same.

> Well there's been a lot of anxiety coming from feminists about the fact that the hopes for restructuring society in radical ways will be undermined by the findings of evolutionary psychology, which draws attention to the biological differences between the two sexes. I think that it's an issue where, I think, although with concerns about biological determinism people are not so worried about in general, but in this one area, yes, the idea that the way men and women are should be fixed, and therefore the ability to achieve parity could be limited by biology, is worrying.
> (Respondent 10 - academic author, sociobiology, Darwin@LSE member: interview, 01/10/01)

An underlying issue in all of this, alluded to in earlier in my earlier discussions of Darwinian feminism, has been how evolutionary psychology arguments have related to the situation with feminist politics itself in the 1990s. Unlike during the Sociobiology debate in the late 1970 and early '80s, when feminist and sociobiologists were diametrically opposed to one another, feminism and evolutionary psychology in the 1990s have both been quite differentiated and even fractured in their arguments. At the same time, liberal-left ideas about social equality in race, class, gender and sexuality were increasingly balanced against other goals, in particular the need to respect and understand differences between people, as described here by one of my interviewees.

> I think there's been a shift from a belief in equality, to a belief in difference, both in the debate about sex and the debate about race, so in the debate about race, it's a shift from the question of equal rights to multiculturalism and diversity. And there's been a similar kind of shift in the debate about sex and gender, where feminists themselves have pushed and promoted the idea of gender difference and the idea of men as aggressive, risktaking, competitive and so on, and women as nurturing, empathic and forming better relationships etc. etc.
> (Respondent 12 - author, freelance science journalist: interview 02/10/01)

Despite evolutionary psychology's intense interest in 'human universals', this shift towards 'difference' as a concept has meant that there is now considerable overlap evolutionary psychology and feminist views on gender. This is not to say that no

opposition exists: in fact much of the overtly feminist commentary in the media was highly, almost reflexively critical of evolutionary psychology, as seen in the following quote.

> I'm tired of being cross with the magnificently offensive Craig Palmer and Randy Thornhill. They've got silly American names, they're exponents of evolutionary psychology (a made-up science if ever I heard of one) and they've scored a vast amount of publicity with a report that won't even be published until April.
> (Polly Vernon, 'I'm not a feminist', The Guardian, March 13th 2000)

Evolutionary psychology's rhetorical attacks on feminism have already been documented at length earlier in this chapter.[31] However, a closer examination makes it clear they were attacking something of a 'straw woman' by characterising feminists as a unified group, who refuse to engage with biology on any level and deny the existence of differences between men and women. Characterising feminism in this way helped evolutionary psychologists attract extra attention whilst still attacking their true target: social and cultural theories of causation in human behaviour.[32] The research paradigm based upon concepts of the social construction of gender is indeed widely prevalent in the social sciences, and probably most of the researchers working in this area could be described as feminists. However, such attacks ignore the extreme diversity of feminist movements described at the beginning of section 5.3, as well as the strong influence that radical, essential feminism has had in the popular domain.

In particular, the concept of feminism as simply 'pro-women' has become increasingly popular, as was evident in the previous interview quote. It actually integrates very well with traditional stereotypes about men and women, the difference often being simply that the values placed upon those stereotypes become reversed. So men's rationality and women's emotionality transform into men's inability to communicate or aloofness, and women's 'communication skills' or 'empathy'. Such arguments have been frequently utilised by some feminists - most notably women in the ecofeminist and women's spirituality movements, which have gained in popularity through the 1980s and 1990s (Daly, 1979; Merchant, 1982; Starhawk, 1979). Perhaps most prominently in recent years, the feminist author and columnist Germaine Greer

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[31] See the beginning of section 5.3.
[32] See Chapter Seven for a detailed discussion of the interdisciplinary politics of evolutionary psychology controversies.

took direct issue with the goal of equality in favour of liberation in her book *The Whole Woman* (1999). These kinds of arguments have had a strong influence throughout society, reinforcing as they do perceptions of feminists as 'man haters'. A good example of how these ideas have influenced the public domain could be the current publicity and website of the UK Equal Opportunities Commission, a public body set up specifically to bring society towards gender parity, particularly in the workplace. Because of the work that the EOC does, it must strike a particularly delicate balance on this issue, displayed in its use of the slogan, "Women. Men. Different. Equal.", with a logo portraying two stick figures, one coloured pink and the other blue, with just a touch of colour blending into each other.[33]

As I described earlier in this section, ideas about sexual difference and the 'sex war' were extremely popular during the 1990s, and dovetailed easily with these kinds of feminist views as well as with evolutionary psychology arguments about gender. Greer herself put an interesting twist onto the sociobiology story of sexual selection in a recent article to ask, 'Do we really need men?'[34]

> Men are redundant not because of women or anything that women might do to them or without them, but because of biology. With every second, the world's men produce 200,000,000,000,000 sperm, while in the same space of time the world's women produce only 400 eggs; intensify that imbalance by considering that a woman becomes a mother only after nine months, and a man can be a father as many times as one of his billions of spermatozoa meets a viable egg, and you can see that the human race could continue on earth if 99.9% of human males were wiped out by some sex-linked disorder.
> (Germaine Greer, 'Do we really need men?' *The Guardian*, 16th November 2002)

Although the Darwinian feminists seem to hold a range of positions on the equality-liberation issue, the very nature of their ideas means they must engage with sex differences, and as I described in the previous section, many of them very overtly lean towards a liberationist, essentialist view. For example, Natalie Angier, the feminist science writer, describes herself as a 'female chauvinist sow'.[35] In addition, some evolutionary psychology claims have come so close to the arguments of radical feminism as to be almost indistinguishable. The best example of this is the work of

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[33] See http://www.eoc.org.uk

[34] Despite this, Greer is not necessarily a supporter of EP, having had a very animated argument with Helena Cronin on Melvyn Bragg's Radio 4 discussion show *In Our Time* (7th January 1999).

[35] Mick Imlah, 'What is she like?' Review of Natalie Angier's *Woman: an Intimate Geography* (*The Guardian*, March 21st 1999).

Randy Thornhill and Craig Palmer (2000), in which they claim that rape is an evolved 'mating strategy', which can be expressed by any man, given the right circumstances. The echoes of the radical feminist slogan, 'All men are potential rapists', which came out of the work of Andrea Dworkin (e.g. 1981) and Catherine Mackinnon (1987), were so strong that the link was repeatedly picked up and commented on in media coverage of Thornhill and Palmer's book. Such a context in feminist politics made it easy for evolutionary psychologists such as Helena Cronin to argue quite strongly that they are themselves feminists, and for many other evolutionary psychologists to claim liberal-leftwing political ground from which they could claim sympathy with feminist goals.

> It has always seemed to me that the strongest argument for positive discrimination for women is the argument based on difference, not equality. Women do bring different touches to jobs: more intuition, better character judgement, less preening ambition. Men, like male chimpanzees in troop hierarchies, are much more obsessed with promotion, and so men are better at getting promoted beyond their merits.
> (Matt Ridley, 'We're doing what comes naturally – the ardent male and the coy female are not some arbitrary human invention.' *Sunday Telegraph*, 24th October 1993)

Finally, there seems to be a wider sense that many people in the UK no longer see feminism as relevant or helpful for their own lives. The multiplicity of feminisms now available combine with longstanding negative stereotypes of feminists to mean that many young women and men do not identify with or really understand what feminism can be.

> I'm constantly on the receiving end of statements by dewy skinned, early 20s women that begin, 'I'm not a feminist or anything, but…' and end with the kind of hardline assertion that would make Simone de Beauvoir chuck gleeful Arab handsprings around Les Deux Magots in celebration of a movement well founded.
> (Polly Vernon, 'I'm not a feminist', The Guardian, March 13th 2000)

These kinds of attitudes have taken root very strongly in the generations growing up since the feminist movements of the 1960s and 1970s, which I have witnessed at first hand with peers, as well as people younger than me. The widespread changes which have meant that so much of our lives are so very different from those of our parents and grandparents have fostered widespread perceptions that society has 'achieved equality', or that there is no longer a need for political action here. A report recently issued by the Equal Opportunities Commission to mark the 75 years of votes for women confirms the view that a great deal has changed, with more women working and

more men caring, yet many inequalities still in effect (EOC, 2003). Another piece of research issued by the EOC at the same time, based upon focus group work across the UK, looked at people's attitudes to the idea of equality (Howard and Tibballs, 2003). This study found that although most of the people they spoke to had experiences of inequality, few of them thought of themselves as having done so. There was a strong sense of resignation about gender inequality, and most of the respondents felt that it was up to individuals to deal with these situations, rather than to society to take collective action in improving the situation, particularly in the context of work in the home.

> Most people seemed to think that women choose to perform the traditional role, and also that the difference in domestic roles, more than any other, reflects natural differences between the sexes. (Howard and Tibballs, 2003, p32).

Finally, this research reported that, 'the concept of 'feminism' was seen virtually unanimously in negative terms as old fashioned and 'ball-breaking'.' (Howard and Tibballs, 2003, p10). It was this finding in particular that lead to the research being widely reported in the media as having found that 'feminism is dead'.

5.4 POLITICS, SOCIETY AND SCIENCE

> It is the turn of the third bearded old man. Marx, Freud and Darwin have cast equally long shadows over the history of the 20th century. But it looks as if Darwin is in the fittest shape to survive into the 21st. Allied to the rise of molecular genetics and brain science, Darwin's founding idea of natural selection – the struggle for life that produces nature's diversity – has evolved into something called 'New Darwinism'. (Anon, 'Genes running amok as Darwinism evolves', *Scotland on Sunday*, 19th May 1996)[36]

[36] This quote was from a piece making links between evolutionary psychology and the American 'New Right', discussed below in section 5.4.1.

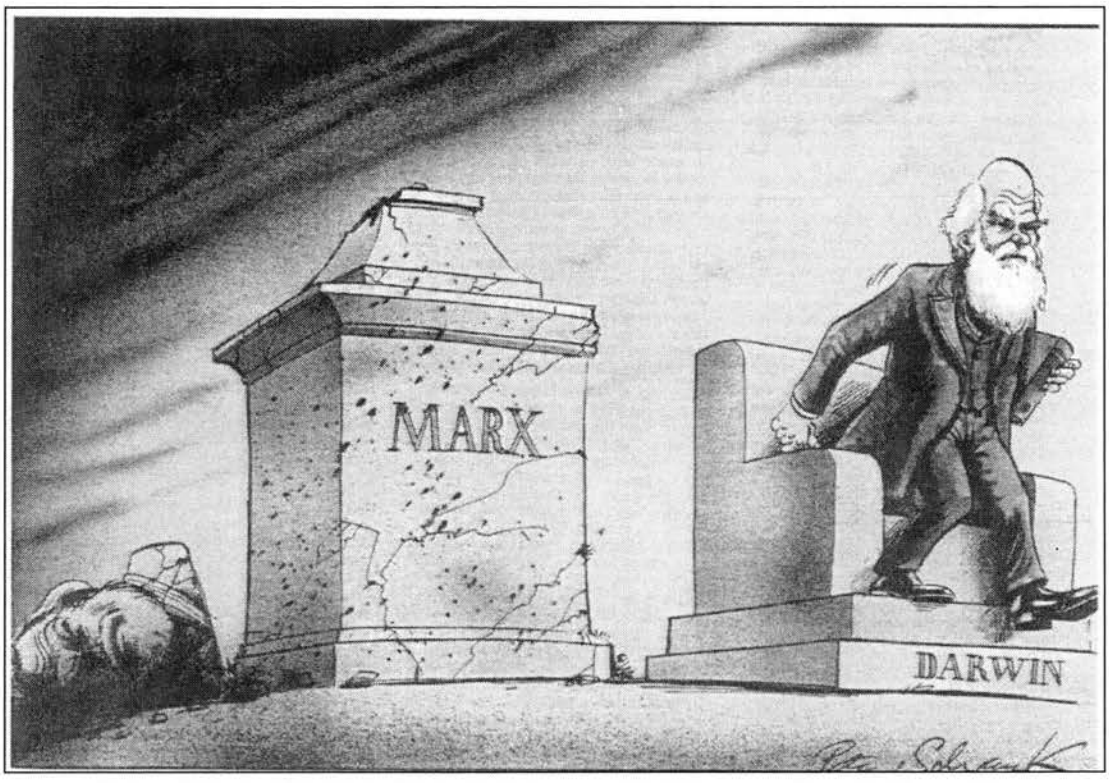

Illustration from Peter Singer, 'Evolutionary worker's party', Times Higher Educational Supplement, 15th May 1998

The theme of comparisons between 'bearded old men', and the ideas that they stand for, was a recurring one in the earlier stages of popular discussions of evolutionary psychology. Sometimes the trio would appear together, while at other times Darwin would be compared with one or other of his 'competitors', with the clear implication that it was Darwin's ideas that were in the ascendant. In these discussions, each of these men was represented as symbolising a set of ideas about people and how they work. In these accounts, Marx represented not only Marxim, but also socialism and traditional leftwing politics, implying that these were being reassessed and left behind with the collapse of Communism and the 'rebranding' of the Left by New Labour and the Democrats in the USA during the 1990s. Freud of course represented psychoanalysis, as one of the most influential set of ideas about what makes people tick, while Darwin was read as representing not only evolutionary theory, but also biology in general and the idea of 'Science' as a potential (apolitical) governing concept for society.

> A poll of academics 20 years ago on the most influential thinker in the social and biological sciences would certainly have featured Marx and Freud near the top, along

> with Darwin. Today, however, Darwin bestrides both fields, while the Marxist sociologist is an extinct species and psychoanalysis is no more influential than any other Hampstead cult.
> (Jerome Burne, 'Survival of the fittest: Evolution will out: Darwinian theory has triumphed over Freud and Marx, infecting studies as diverse as medicine and English literature', *Independent*, October 24th 1996)

However, it is worth remembering that psychoanalysis and the image of the psychiatrist are also an enduring popular image of what the academic study of psychology is about, whereas evolutionary psychology (represented by Darwin) is strongly rooted in the cognitive, experimental tradition of psychology research. Similarly, Marx could also be portrayed as representing social science research about people, as in the phrase 'Marxist sociologist'. So the imagery of Marx, Freud and Darwin is not only about the changing political context of the 1990s, but is also a good metaphor for competing theories of human nature and society, and the academic disciplines that they can represent.

Between them, the different metaphorical layers of discussion about Marx, Freud and Darwin managed to encompass many of the wider contexts of the UK of the mid and late 1990s in which evolutionary psychology emerged into the popular domain. In particular, as the above quote suggests, evolutionary psychology was closely interlinked with the specifically political context of the newly elected governments of the US and UK. Evolutionary psychology utilised to its advantage a scientific atmosphere in which the claims and achievements of biology in general, particularly genetics and neuroscience, were achieving more prominence than ever before. Finally, EP also keyed into cultural anxieties about this new prominence of biology, closely linked to concerns about possibilities for political action and social change, which were also widely expressed during the 1990s.

Although these issues did take second place to the discussions of evolutionary psychology and gender I have reviewed above, they did provide an important background to this major theme. I also believe that such discussions of evolutionary psychology, politics and biology provided an important context and help to explain why many of the debates about evolutionary psychology and gender politics took the form that they did. Furthermore, these wider issues help illustrate the context in which the claims, counter claims and wider discussions of evolutionary psychology took place, and can help us understand how it came to popular attention at the time that it did.

5.4.1 'New Darwinism' and 1990s politics

> America's Clinton years, like so much else that occurred before 11 September 2001, feels today like a long, long time ago, in a galaxy far, far away.
> (Stryker McGuire, review of 'The Clinton Wars: an insider's account of the White House years', by Sidney Blumenthal, *New Statesman*, 3rd July 2003)

This recent comment struck me as very redolent of a feeling I have frequently had when working on the write-up of this PhD. I will often finish a day's work immersed in newspaper articles discussing evolutionary psychology, Dolly the sheep, the Human Genome project, Bill Clinton, New Labour and the death of politics, to watch the evening news. There, I hear about George W. Bush and his ultra-conservative Republicans, war in Iraq, mass peace demonstrations, the transformation of Tony Blair into a 'neo-conservative' and the flaws and problems of biotechnology research into cloning or GM. It certainly does seem that the overall tenor of discussion has changed as we have moved into a new decade, not least because of the September 11th attacks.[37] Although of course, we are not really that far from the mid 1990s at all, it is probably helpful to sketch out some of the major political shifts and background of the time, in order to re-evoke the atmosphere and major concerns of the time.

As I described in Chapter Four, evolutionary psychology first appeared in the UK media in 1994 and 1995, was discussed most extensively in 1998, 1999 and 2000, and then the frequency of mentions in the press started trailing off in 2001. It could be argued that this was due to the events of 11th September squeezing the media space available for non-news subjects such as EP, except for the fact that EP coverage started to trail off *before* September 2001.[38] However, this time period did see very significant political shifts in both the UK and US, the countries where most discussion of evolutionary psychology have taken place. So, Bill Clinton of the American Democrats was elected President of the USA in 1992, winning against the previous Republican President George Bush; was re-elected in 1996, and then lost power to the Republican

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[37] Whether September 11th actually 'changed everything' or just allowed people to claim this as so is certainly a contested notion, but is well outside the bounds of this research. However, it has provided a convenient marker of change for most media commentators, which can often amount to the same thing.
[38] See Chapter Four, section 4.4.3.

George W. Bush in November 2000. This shift from conservative to liberal to conservative power was broadly reflected in the UK, where Tony Blair became leader of the opposition Labour party in 1994, was elected as Prime Minister in 1997, re-elected in 2001 and continues to hold office today. However, the Labour government has reflected the shift to the right in the US in many of its policies, not least in its support for war in Iraq.

During the 1990s, Clinton's Democrats and Blair's Labour Party held in common very much more than being the mainstream political party on the left in their respective countries. Both were actively engaged in reinventing what they wanted leftwing politics to be all about, moving away from the larger principles of old and towards smaller scale, focus group led, market and business positive policymaking. In particular, Tony Blair's reforms of the Labour party, reducing the power of the unions and reinventing the party as 'New Labour', substantially shifted his party's policies towards the centre of the traditional political spectrum. Labour's huge electoral success meant that, certainly for their first term of office, this movement away from ideology and the consequent contraction of the difference between left and right in mainstream politics remained unchallenged. Although there have of course been many other factors involved, this certainly contributed to people's disillusionment with the mainstream political process and the perception that there was little difference between the parties available.[39]

These political shifts and realignments were reflected by the evolutionary psychologists as they appeared in the public domain over this period. The Sociobiology debate of the mid-1970s was often depicted as taking place between radical leftwing academics and rightwing antifeminists using evolutionary theory to justify the status quo in society. While this would be a caricature, the anti and pro Sociobiology arguments could be broadly characterised as respectively fitting into (or congruent with) the left and rightwing political agendas of the time. In actual fact, even at the time, prominent sociobiologists such as E.O. Wilson and Richard Dawkins could probably be best described as politically naïve or broadly in centre-left positions (apart from on

[39] Of course, this could also be seen as a continuation of Margaret Thatcher's reforms of rightwing politics in the UK. Such movements have led to some interesting work being done on the reshaping of today's political landscape away from traditional distinctions between left and right: see for example, http://www.politicalcompass.org/.

feminism), while others such as John Maynard Smith were Marxists, just like their opponents. In contrast to popular perspectives of Sociobiology, although perhaps in continuity with the actuality, evolutionary psychologists have adopted a very wide range of political positions. From Matt Ridley's libertarian right position and Kingsley Browne's overt antifeminism, through Robert Wright and Steven Pinker's centre-liberal positions, Helena Cronin and Sarah Hrdy's feminism to Peter Singer's 'Darwinan left', the political positions adopted by today's Darwinists have very little in common other than their shared evolutionary stance. This kind of political elasticity has been commented on by other authors (e.g. Harwood, 1977), not least by those at pains to point out the strong presence of leftwing eugenics movements in the US and UK prior to the Second World War (Stack, 2000).

On the whole, evolutionary psychologists have worked extremely hard to reposition their public image away from the traditionally rightwing associations of Sociobiology, Social Darwinism and eugenics. Under the aegis of Darwin@LSE's series of books, *Darwinism Today*, the utilitarian philosopher Peter Singer, most famous for his work on animal rights (Singer, 1976), argued that Darwinism should be reclaimed by the left and that its implications need not be reactionary (Singer, 1998). Also in the *Darwinism Today* series, the epidemiologist Richard Wilkinson took a Darwinian approach to questions of inequality, while the work of the science writer Marek Kohn:

> seeks to recapture Darwinism from the political right, and to show that a better understanding of our evolutionary history need not lead to an imposing of limits on who we are and what we may become.
> (Marek Kohn, *As We Know It: coming to terms with an evolved mind*, 1999; book jacket blurb)

This kind of repositioning could be seen particularly strongly with Steven Pinker's writing and public statements, in which he would firstly deny determinist ideas about biology.

> 'By Darwinian standards, I am a horrible mistake, a pathetic loser,' says Professor Steven Pinker. He is explaining why, despite two marriages, he has chosen to remain childless, 'But I am happy to be that way, and if my genes don't like it they can jump in the lake.'
> (James Langton, 'Interview: The man who thinks he's a computer' Sunday Telegraph, 7th December 1997)

Following this, he would strongly claim his own leftwing political allegiances, and invoke the 'naturalistic fallacy' (that it is a mistake to infer politics from science)[40] to further insulate himself from political criticism.

> Apart from expressing support for controlled abortion, and a brief attack on those who believe race and intelligence are linked – 'It is irrational. The colour of your skin is clearly related to climate' – Pinker seems consciously to steer away from political debate. 'Do I have opinions? Yes, of course.' But he prefers to keep them to himself? 'Not necessarily because I am namby-pamby, but really, you know there are only so many hours in the day. Science is distinct from moralising or legalising'
> (James Langton, 'Interview: The man who thinks he's a computer' Sunday Telegraph, 7th December 1997)

This also helps locate evolutionary psychology politically as anti-racist, a position that flows quite directly from their stated interest in human universals.

Although the quote at the top of this section characterising evolutionary psychology as 'New Darwinism' was actually doing so to associate it with the American 'New Right' of Newt Gingrich in the mid-1990s,[41] several other pieces used 'New Darwinism' in the context of New Labour in the UK. The centre-left positioning of EP fitted very well with that of the Labour Party as it reinvented itself in the mid-1990s and moved into power in 1997. In particular, their was often something of New Labour's rhetoric towards *its* harder left critics as 'ideologically motivated' and unable to face up to 'hard truths' - as in this evolutionary psychology review of the Roses' *Alas Poor Darwin* (2000).

> The contributors are largely sociologists of the 1960s New Left generation, whose critiques of 1970s socio-biology are recycled here with more political self-righteousness than scientific integrity. They characterise evolutionary psychology as pernicious conservatism, but fail to explain why it has attracted the support of so many socially conscious thinkers, [...]. Their goal is not to improve evolutionary psychology, but to stop it because they think it has a hidden ideological agenda contrary to their personal views. In practice, they just want the social sciences to be left alone, empirically unaccountable to the biological sciences, and fiscally unaccountable to tax-payers who are demanding more evidence-based social policies. Their anxieties stem from a distinctly intellectual kind of paranoia, a belief that science has far more power to shape political beliefs than it really does.
> (Geoffrey Miller, 'Taking a pop at psychology' *Evening Standard*, 3rd July 2000)

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[40] Discussed at greater length in Chapter Seven.
[41] Republican politician and former Speaker of the US House of Representatives – led attacks against Clinton during the Lewinsky scandal.

The links between EP and New Labour were, however, more substantial than simply linguistic and rhetorical similarities. In 1996 the thinktank Demos published a special issue of its quarterly journal entitled *Matters of Life and Death: the world view from evolutionary psychology* (Curry, Cronin and Ashworth, 1996), while its members participated in several public debates with Darwin@LSE members. Demos was established in 1993, and identifies itself as 'independent'. However, it has strong links back to the radical left publication *Marxism Today*, and many of its ideas broadly fit within the centre-left agenda of New Labour, as well as sharing a mutual distaste for ideology. Demos' ideas have been described as 'a radical agenda of eye-catching, media friendly policies'[42], and evolutionary psychology at this time certainly fit well within such a description. In addition, during the mid- 1990s Demos' first director, Geoff Mulgan, was enthusiastic about the ideas of evolutionary psychology,[43] and since moving on from Demos in 1997 was first a special advisor to the Prime Minister, and is now head of several government policy units.[44]

5.4.2 Biology as the premier science of the 90s

> 'Politics is dead. Science is sexy. Scientists are too, especially if they're called Stephen, Steven or Steve'
> Party politics no longer provides the ammunition for argument. Who argues about the minimum wage, New Deal or independence for the Bank of England? How many of last night's dinner parties strayed onto proportional representation? The issues which divide us today are genetically modified crops, cloning, the use of embryo material for transplants...
> (Richard Thomas, *The Observer*, 29th November 1998)

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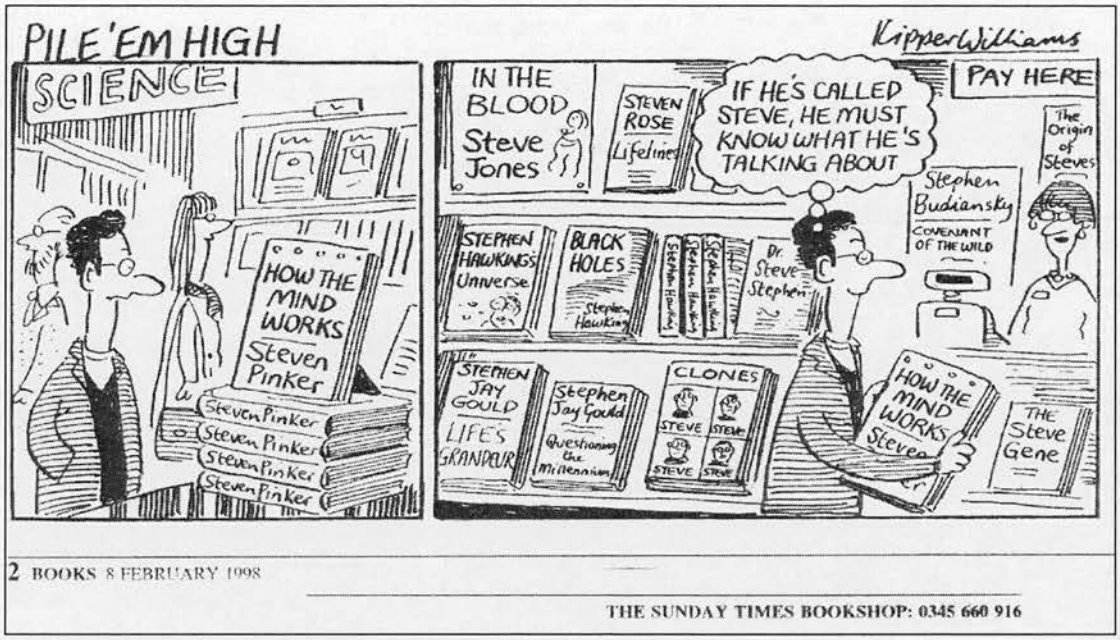
[42] *The Guardian* Online's 'Thinktanks' section http://politics.guardian.co.uk/thinktanks/. See also http://www.demos.co.uk/.
[43] Geoff Mulgan and Charles Leadbetter, 'Ideas for our times' *Independent*, November 29th 1995.
[44] Nicholas West and Patrick Wintour, 'Spinners, fixers and the prince of wonks' *The Guardian*, February 23rd 2002.



The 'Steves' referred to here were the stars of the popular science boom of the 1990s, such as Stephen Jay Gould, Stephen Hawking, Steven Pinker, Steven Rose and Steve Jones, several of whom were involved in the EP debate. It was against the political backdrop described in the previous section, whereby commentators could easily announce that 'politics is dead', that this boom occurred, not only in the publishing world, but also throughout the rest of the media. The 1990s saw the induction of specialist science sections in most of the UK daily newspapers, and an overall increase in rates of science reporting across all media forms in the UK. A crucial component of this increase was the displacement of the physical sciences by biomedicine as the most prominent area of science in the public domain (Bauer, 1998). Importantly for evolutionary psychology, two of the most visible disciplines within this boom have been genetics and neurobiology. Advances in techniques for mapping and decoding genes, as well as similar developments in the mapping and scanning of brain activity have lead to a huge increase in media reports about scientific findings of 'genes for' or 'brain areas for' specific diseases, disorders and behaviours.

Such claims about the genetic or neurological bases of human behaviours dovetail very neatly with evolutionary psychology claims on several different levels. For a start, such claims seem to provide a more concrete empirical grounding to the largely theoretically based claims of evolutionary psychology. For example, evolutionary

psychologists claim an evolutionary basis for universal sex differences, while at the same time neurobiologists claim to find different patterns of brain activity in men and women while performing specific tasks such as map reading or throwing balls. Another, more specific example of this kind of co-option can be seen in a recent book about autism, Simon Baron-Cohen's *The Essential Difference* (2003). Baron-Cohen uses an evolutionary perspective to argue that autism is a disorder in which a person lacks a 'theory of mind': the ability to recognise other peoples' emotions or mental states. However, he also argues that a mild form of the disorder, Asperger's syndrome, is a manifestation of the 'extreme male brain' – the male brain being analytical, logical and so on while the 'female brain' is conversational, relational and emotional. Baron-Cohen's work therefore brings together an evolutionary theoretical and a neurobiological model of essential sex differences in one integrated package. This example also illustrates the other level on which evolutionary psychology and neurobiology work can co-opt one another, which is in a shared model of the 'modular mind' – the idea that the brain is made of many separate areas performing specialised and differentiated functions. Evolutionary psychology theorises that these have evolved for these functions just as organs in the body do, while neurobiology works to demonstrate this functionality in action through brain scanning.[45]

In a similar manner, widespread claims about the genetic basis of behavioural features such as intelligence, or disorders like schizophrenia have mutually shaped popular discussions of evolutionary arguments for many years. Ever since the publication of Dawkins' *The Selfish Gene* in 1976, which was widely perceived to be a theory about 'genes that cause selfish behaviour in people', popular discussions of genes have moved easily around a number of different meanings of the word. So a 'gene' can be something that comes out of a cell to be mapped by molecular biologists, it can mean something derived from this process that when damaged causes a disease such as cystic fibrosis, or it can be further abstracted to mean something that somehow affects what a person is like, such as their height, or perhaps their personality. When genes are discussed by evolutionary biologists, they generally mean something very abstract and

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[45] However, this model of mind and brain function is about as equally contested within cognitive psychology as it is within neurobiology, with other scientists arguing that the whole brain works together in a 'connectionist' manner (ref).

probably even metaphorical. If a feature is subjected to evolutionary pressures, then it must be 'genetic' in order for natural selection to operate on it, however, this says nothing about how such a 'gene' actually creates that feature in a causal sense, let alone where it might exist on a person's chromosomes. Another sense in which evolutionist might use the word is in the phrase 'good genes', and again this bears no real relationship to the more actualised genes of molecular biology or behavioural genetics. However, these distinctions are not ones widely (or at all) recognised in the public domain, and this does of course work to the advantage of the many sciences concerned with genetics, as described here by one of Dawkins' publishers:

> Richard Dawkins has spent his entire career trying to argue against misinterpretations of his own work, and yet misinterpretations that he walked into. If he hadn't called that bloody book The Selfish Gene, and used a word that exists to describe human behaviour to describe inanimate objects that can't be psychologically motivated, it would of course never had been anything like as successful, it was a brilliant title! And Richard is brilliant on titles, he's very good at the snappy, and yet he's never stopped [...] arguing "no I don't mean genes for selfishness, I mean genes that behave as though they were selfish if one were actually anthropomorphising them as though they were motivated by human psychology". And yet, is it any wonder that people misinterpret him that way?
> (Respondent 13 - nonfiction publishing editor: interview, 22/01/02)

So in media discussions of evolutionary psychology, 'genetic' is very, very frequently used as a synonym for 'evolved', as in, 'Are human beings genetically programmed to be unfaithful?'[46] When the topic of discussion was sex or attraction, journalists and editors often just couldn't resist using the pun between genes and a certain item of clothing; as in 'Hi handsome, I just love what you have in your genes' (Cherry Norton, *Independent*, 11th June 2000), or, 'I think your genes will suit me beautifully' (Jennifer Trueland, *The Scotsman*, 21st January 1998). In the years leading up to the completion of the rough draft of the Human Genome Project in June 2000, the number of stories about genetics increased hugely, with the claims about what it could do, also becoming increasingly extravagant.[47] These claims combined with other dramatic developments in the area of biotechnology such as the cloning of Dolly the sheep in 1997 and the controversy over genetically modified foods in 1998. This created an atmosphere in which biological

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[46] From a discussion of Robert Wright's *Moral Animal* (1995): Chrissey Iley, 'Adultery we can't help it, it's in our genes' *The Sunday Times*, 14th August 1994.
[47] E.g. *BBC News Online*, 'Genetic revolution work begins' 27th June 2000. A helpful comparison is the relatively low-key coverage of the actual completion of the work in April 2003 (*BBC News Online*, 'Human genome finally complete' 14th April 2003.

research (and EP was included with this in this context) was simultaneously treated with awe and fear, but with little concrete criticism.

A second, more specifically British, thread of discussion here was far more concerned with the popularity of Darwinism in particular at that time. This was particularly apparent during 1998, when media coverage of evolutionary psychology first started to rise steeply, there were several car advertisements on the theme and the BBC hosted an 'Evolution Weekend', with a series of programmes on Darwin and evolutionary themes.[48] The image of Darwin as a 'bearded old man' is very iconic, and he is particularly embraced in this country as a British scientist, culminating in his appearance on the current Bank of England ten-pound banknote in the year 2000. A significant part of this discussion of Darwinism was less concerned with the current developments in evolutionary science, and more with the implications of wide acceptance of Darwinism for the spiritual life of this country. Sometimes this was couched in specifically religious terms, discussing Darwinism in the context of the decline of the Church of England and an increasingly multifaith and secular society.

> Now the faith once placed in God is laid at the feet of a funny old man with a beard who walked round his garden in the village of Down, in Kent, 150 years ago. [...] The new Darwinism sometimes sounds like a religion. People believe in it: they make an act of faith. Darwinism is naturally a "broad church", and within it are sects, schisms and heresies. People who talk about it slip into the language of religion, refer to some of the scientists as "high priests" and those who follow them as acolytes. (Tim Radford, 'And Darwin created us all...', *The Guardian*, February 6th 1999)

Other discussions expressed anxieties about the implications of Darwinism alongside other developments in the biosciences for a broader sense of spirituality or mystery. In either case, it seems that such discussions would be much less likely to occur either in continental Europe, due to greater political resistance (Euler and Voland, 2000), or the USA, where people are more actively involved in religion, and indeed evolutionists are heavily engaged in controversy with creationists and intelligent design theorists (e.g. Park, 2001).

[48] http://www.bbc.co.uk/education/darwin/index.shtml

5.4.3 Determinism, ideology and (possibilities for) social change

The two issues of a collapse in politics and the rise of biology and Darwinism in society came together most obviously in media discussions of the issue of 'biological determinism'. This is one of the major criticisms of evolutionary psychology made by its opponents: that it gives an overly simple picture of the role of biology in creating human behaviour and suggests that what people do and are is entirely determined by that biology. Such critics argue that evolutionary psychology explanations leave no room for human action and choice (free will) over what they do, and that they also imply that society cannot be changed through political will or action (see, e.g., Rose, 1997). As my content analysis showed, this was the third most frequently discussed issue in media coverage of evolutionary psychology (Chapter Four, section 4.4.3).

This would take several forms, the first of which took the form of quite serious statements warning of the follies of going against 'human nature':

> Since human nature is not going to change soon, a policy goal of full parity between men and women is unrealistic. Such parity could be achieved, if at all, only through huge governmental coercion and at great cost in lost wealth and human freedom.
> (Kingsley Browne, 'Segregation of the sexes is here to stay', Financial Times, October 10th 1998)

However, these kinds of overt statements were fairly rare, and much of the commentary mentioning determinism actually did so in a fairly light-hearted way. This was particularly apparent in the discussions surrounding the possible evolutionary basis of infidelity, as in, 'Ah, so the girl can't help it, and the boy can't either.',[49] or in the following comment:

> When a woman give birth to a baby which is not her husband's, or a man leaves his older wife for a younger model they may have the perfect excuse – evolution means they are programmed to act that way.
> (Jennifer Trueland, 'I think your genes will suit me beautifully', *The Scotsman*, 21st January 1998)

As well as the writings of Steven and Hilary Rose arguing against the determinism of not only evolutionary psychology, but also of the kinds of neurobiology and genetic claims discussed above, a fair amount of commentary critical of EP continued in a similar vein.

This was particularly apparent in discussions of overt 'gender politics' issues such as Kingsley Browne's arguments about the glass ceiling, and also in terms of individuals responsibility for their actions.

> It seems inconceivable that human beings will ever lose the sense that we make out own choices. It is part of our daily experience. Yet the more we come to recognise that we are acted upon, rather than actors, the more our perception of free will changes. [...] When we see ourselves as the children of our times, the products of various forces and influences beyond our control, we look at our behaviour in a different way: neither good nor bad, but explicable for one of a number of reasons. That way the flame of free will can be effectively extinguished and conscience snuffed out.
> (John Humphreys, 'We are bigger than our genes – thank God', *The Sunday Times*, July 2nd 2000)

In this light, it is unsurprising that the two incidents which seemed to raise the most critical, anti EP comment – Steven Pinker's comments about the Lewinsky affair and Thornhill and Palmer's work on the evolutionary origins of rape – both combined issues of gender politics with questions about biology and personal or criminal responsibility.

Evolutionary psychologists are always careful to point out that they do not, in fact, support determinism, acknowledge the role of environment and culture in shaping organisms, and assert strongly the importance of free will and choice in determining people's actions.[50] However, they do generally end such statements with a 'but', going on to assert the importance of biology in behaviour yet again. Some evolutionary psychology arguments seem to show a certain indifference to politics which fit very well with generalised disillusionment with politics and ideology experienced in the 1990s.

> [Geoffrey] Miller, who would himself make a handsome Tarzan of the Apes, specialises in the evolution of mate selection. He argues that ideology owes a lot to the behaviour of our tribal ancestors who roamed the savannah, that student protests are a kind of dating service, that creative genius emerged as a way of getting sex, that technology is a side-effect of adaptations originally designed for courtship.
> (Christian Tyler, 'Reinstating the beast in man', Financial Times, January 4th 1997)

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[49] Chrissey Iley, 'Adultery: we can't help it, it's in our genes', *Sunday Times*, 14th August 1994.
[50] As in the comments made by Steven Pinker, quoted above in section 5.4.1.

5.6 SUMMARY

In this chapter, I have showed how some of the claims made by popular evolutionary psychology were mutually shaped with the social and political contexts of 1990s Britain. Concentrating on discussions of evolutionary psychology and gender, such as were seen in EP claims about gender differences, sexual attraction and relationships, I showed how they were taken up into discussions in the media of much wider issues. These included concerns about gender politics in the 1990s, such as increasing perceptions of differences between men and women, increasing levels of divorce and broken relationships, and particular episodes in this, most notably with the Clinton-Lewinsky scandal in 1998. Evolutionary psychology's links with the rise of the centre-left in mainstream US-UK politics were also explored. These links took both concrete and more abstract forms, in terms of some evolutionary psychologists' forays into the policy domain, as well as in a shared hostility to ideology and occupation of centre-left political ground. The arguments put forward by evolutionary psychologists were also being made in an atmosphere where biology was moving into increasing public prominence, and claims about the genetic, hormonal and neurobiological bases of human behaviours and character traits were constantly being made. Some commentators expressed unease about the implications of such claims (EP included) for, in particular, possibilities for social change and for understandings of personal responsibility. Such concerns contributed strongly to increased levels of scepticism and hostility expressed against certain kinds of EP claims, for example against evolutionary arguments about the basis of rape.

As I said at the beginning of this section, looking back on the 1990s from a perspective early in the next century, it seems inconceivable that commentators could assert with ease the idea that 'politics is dead', and science could somehow be taking its place. Although the problems of falling turnout in democratic elections in the UK, which came strongly to public attention in the 1990s, have actually worsened considerably since this time, politics has decidedly moved back up to the top of the media agenda once again. At the same time, media attitudes towards biology and the sciences seem also to have shifted, with the final completion of the Human Genome Project in April 2003 receiving a fraction of the press attention and hype awarded to the

draft completion in the summer of 2000. These changes did not happen overnight, and they are not necessarily directly linked, but they do highlight how social and political context have been changing in recent years. As I described in Chapter Four, section 4.3. coverage of evolutionary psychology, as well as usage of the word genetics reached a peak in 2000 before starting to drop off the following year, and my impression is of a continuation of this trend, with other evidence from interviews backing up the idea that evolutionary psychology has 'had its day' in the public domain. Whether it has done so in the academic world is, however, a different question, which I will return to in Chapter Seven.

Chapter VI:

"It's Just Common Sense": Evolutionary Psychology, the Media and Expertise

6.1 INTRODUCTION: HOW DOES THE MEDIA COVER EVOLUTIONARY PSYCHOLOGY?

6.2 SOCIAL WORLDS OF THE UK MEDIA

6.2.1 Specialist science journalists and generalists

6.2.2 News and features writing

6.2.3 Journalists and editors

6.2.4 'A good story': news values and evolutionary psychology

6.3 THE CONSTRUCTION OF HUMAN EXPERTISE IN THE PUBLIC DOMAIN

6.3.1 Expertise in the evolutionary psychology debate

6.3.2 Lay expertise, experiential expertise, or common sense?

6.3.3 Implications for communication: the language of reflexive science

6.4 CONCLUSIONS

Chapter VI:

"It's Just Common Sense" Evolutionary Psychology, the Media and Expertise

6.1 INTRODUCTION: HOW DOES THE MEDIA COVER EVOLUTIONARY PSYCHOLOGY?

> Isn't that just to do with the fact that people are more interested in themselves than they are in bits of rock or whatever...? [response to my quantitative findings] (Respondent 3 - academic author, evolutionary psychology, Darwin@LSE member: interview, 23/01/02)

Earlier in the thesis, I reported how quantitative analysis of the UK press coverage of evolutionary psychology had found some quite different patterns of coverage from that generally seen for media coverage of the sciences. These findings were discussed in detail in Chapter 4, section 4.5, but several features emerged as particularly important in illustrating the contrast between evolutionary psychology and more generalised 'science' coverage. In this chapter I will concentrate on the finding that evolutionary psychology is covered by different people, and is reported in different sites than is seen in media coverage of other 'science'. To recap, EP coverage was compared directly with that of a related, but more classically 'scientific' subject (articles containing both the words 'evolved' and 'genetic'). In this comparison, I found that EP articles were less often written by specialist science journalists, and more often by non-specialists in science or academics. I also found that the newspaper section in which articles appeared was different: EP appeared much less often in science sections or in the main body of news, and more often in supplements or columns.[1] These findings confirmed my initial impression, gained during MSc research, that the media were not always coding evolutionary psychology as 'science', and that it was often turning up in other contexts where discussions of science don't generally occur.

Although there have been many content analysis studies of science coverage in the media, including studies of newspapers, television, the US, UK and other global media, it is actually very difficult to compare the results of these studies. This is largely because

[1] For graphical representations of these results see Chapter 4, section 4.5.1 and 4.5.2.

there has been little consensus even on what counts as 'science' coverage, with some studies looking only at reports of research findings, while others excluded the social sciences, humanities or medicine. In addition, these studies tend to investigate very diverse research questions, so that the categories under study also vary widely, as well as which findings get published. For example, many content analyses are interested in issues of accuracy, so concentrate on such measures, while I have not been concerned with this at all. Similarly, content analyses of newspapers tend to record the section of the newspaper in which articles appear as a matter of course, but then do not report these data, as the research is not concerned with it. However, there are a few studies which provide some broad, although not direct, comparisons and indicators of where science coverage appears and who writes it.

The most extensive content analysis carried out to date on science in the UK press reports that feature articles comprise around 20% of overall science coverage, whereas I found a figure of 80% features for evolutionary psychology coverage (Bauer et al, 1995, p27).[2] In a content analysis of the Italian press, Bucchi and Mazzolini (2003) report that 38% of science coverage appears in science sections or special supplements, whereas I found 20% in my 'science' sample and 5% of EP coverage in science sections. A recent study by Hargreaves, Lewis and Speers (2002) carried out content analyses of media coverage of the MMR vaccine, climate change and cloning/genetic medical research issues. They found that 20% of cloning, 11% of climate change, and 21% of MMR coverage took the form of columns and commentary pieces (described as opinion/editorials). This compares with figure of 21% for evolutionary psychology coverage (see section 4.4.2). The Hargreaves study also reported some interesting variations in the authorship of science coverage. Science correspondents wrote 38% of the coverage of cloning and genetic medical research, 28% of climate change, and 20% of coverage of the MMR controversy. This compares with my findings of 47% authorship by science journalists for 'evolved and genetic' stories, and 10% for evolutionary psychology stories. A few trends can be discerned from this thicket of statistics. Most notably, the pattern of EP coverage does seem to be different to that seen for other sciences, with more feature articles and less coverage in science sections.

[2] From the mid-1970s until 1990. This figure would include together articles in science supplements, reviews and columns, which I have recorded separately in the content analysis (Chapter 4, section 4.4.2).

The number of columns was higher than that seen for climate change, but comparable to that for cloning and MMR. Finally, the amount of EP coverage written by science journalists was indeed far lower than that seen for other scientific topics. So the conclusion that evolutionary psychology is being treated differently by the media seems to be a valid one on the basis of external as well as internal comparisons.

There is a smaller body of research studies which have looked at relationships between the media and the social sciences, and some of their findings are very pertinent to the trends found here for evolutionary psychology. Weiss and Singer (1988) carried out a combined content analysis and interview study of social science in the US media. They found that, unlike science, social science is not treated as a unitary subject or journalistic 'beat'. There is no such thing as "social science journalism" in the same sense as science journalism, which is a very clearly defined specialist area of the media. Science journalists generally do not consider the social sciences as an important part of their beat: only 7% of the social science stories analysed by Weiss and Singer (1988; p57) were written by science journalists (the figure found for evolutionary psychology was 10%). In addition, other studies have found that science journalists are often very dismissive of the value of social science research, regarding it as unscientific and uninteresting (Dunwoody, 1986a; 1986b). Instead, social science stories tend to be spread across the entire remit of media coverage and are generally framed as stories 'about' the specific subject of the research, like crime, economics, parenting or relationships. This of course means that these stories are generally written by generalists, or by journalists specialising in the respective topics, both of which are much less likely to have in depth understandings of the processes of research, or the relevant academic disciplines (Weiss and Singer, 1988). The existence of science journalists signals the media's acceptance of science as a distinct domain of knowledge requiring an in-depth understanding or training to cover it well. In contrast, both science and other journalists regard the social sciences as subjects which can be covered by anyone and require no specialist knowledge to understand (McCall, 1988).

This is in part due to the subject matter of the social sciences: ourselves. As McCall and Stocking (1982, p988) put it, "Everyone, including journalists and editors, fancies himself or herself something of a psychologist, but not an astrophysicist. Results from

psychology, but not physics, must therefore square with experience to be credible." In a further content analysis of social science in the US media, William Evans (1995) reports that journalists make strong demarcations between natural science and social science as well as lay opinion, but not between social science and lay opinion. In addition, social science is accorded less cognitive authority by referring to social science researchers as 'authors', rather than 'researchers' or 'scientists', reporting it more often as general news rather than in science sections, and by referring to sources less frequently.[3] However, this pattern could also be seen as conferring a much greater public visibility on the social sciences: Hansen and Dickinson (1992) report social sciences as the second most frequently reported area of science after health/medical reporting. Editors tend to prefer stories about social science rather than natural science because they see the subject matter as more relevant and interesting to wide audiences (Dunwoody, 1983). This property of social science stories as 'being about people' also means that they are far more likely to fit in with media criteria about news values (see, e.g. Gregory and Miller, 1998, p108-114), therefore boosting the likelihood of their appearance in the media.

It would be tempting to simply regard the findings about coverage patterns of evolutionary psychology as a simple continuation of this phenomenon – EP is not being reported as science, but as social science, and therefore follows the same pattern of coverage. As I found in my content analysis, over half[4] of the evolutionary psychology coverage was primarily concerned with the very human subjects of gender and sexuality, so the same issues of media framing are likely to be in operation here. However, as often happens, things are not quite that simple. Although evolutionary psychology is not often covered as *science* (i.e. by science journalists or in science sections), it is also not often covered as *news*. Weiss and Singer's study shows that social science is often covered in the form of news reports about new research findings. In contrast to this pattern, EP largely appears in newspapers in the forms of feature articles, book reviews and commentary pieces, away from the main body of news at the front of the paper. This opens up yet another dimension to evolutionary psychology coverage - that it is

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[3] To date, I have not encountered any research looking at social science in the UK or other global media, so these comparisons must, again, be considered to be only broadly valid.
[4] See Chapter Four, section 4.5.1

less often covered as news (a major route for the reporting of most research in the media).

I have reviewed here the findings of my content analyses of the UK press coverage of evolutionary psychology and then compared them with the wider literature on science in the media. Although direct comparisons with previous studies are impossible to make, the generalised pattern of media coverage of natural science is very different to that found for evolutionary psychology. I have also compared my findings with the small literature addressing media treatment of the social sciences, and have found some strong similarities. Most notably, both EP and the social sciences tend not be covered specifically as 'science', rarely appearing in science sections or written about by science journalists. They share a tendency to instead be covered across the whole media remit, often framed as stories 'about' the specific research topic, such as crime, or in the case of EP, gender politics. The literature on social sciences and the media is also suggestive of possible reasons for this differential treatment, focusing as it does on the lesser epistemic authority of the social sciences in the public domain. This includes science journalists' dismissal of the social sciences and the effects of their subject matter: human beings on the media. However, this picture is complicated by a crucial difference between EP and social science media coverage. While most social science stories appear in the media as 'news' of some form or other, focussing upon the findings of research studies, evolutionary psychology coverage instead appears as in-depth feature articles, book reviews or commentary pieces and rarely focuses on specific research findings.

In the rest of this chapter, I will explore how the interactions between the subject matter of evolutionary psychology and the social worlds of the UK media have led to the coverage patterns I have found. Following the suggestions of the literature on social sciences and the media, I explored these issues with my interviewees by showing them the findings of where and how EP was covered by the UK press, and inviting their suggestions on why this patterns had occurred. Their responses were extremely interesting, and shed much light on how common working practices and divisions of labour across the media have created the popular debate over evolutionary psychology. I will then move on to discuss what the major issue underlying differential media treatment of the natural sciences, social sciences and evolutionary psychology: what

happens when the domain of expertise claimed is one in which we all have some knowledge, i.e. the matter of being a human being. I will discuss the work of several authors who have touched upon this issue in various ways and will outline the differences between these formulations. Finally, I will discuss the implications of this for constructions of expertise in those sciences concerned with people, their thoughts, behaviour, society, culture and evolution. I will end the chapter with a brief discussion of how this may affect communication about such sciences between 'experts' and 'lay people', illustrated with the example of evolutionary psychology.

6.2 SOCIAL WORLDS OF THE UK MEDIA

> but fundamentally newspapers are modular, and you have to go into a particular module, you have to know whether you're selling it [the story] as a feature or a comment piece or an op-ed, or a magazine, and those are separate, entirely autonomous groups of people...
> (Respondent 1 - author and freelance science journalist: interview, 30/07/02)

In Chapter Four, I discussed the social worlds of the different forms of media in which evolutionary psychology appeared over the 1990s, and how their different values and priorities made them more or less suitable for covering evolutionary psychology stories. Across most media forms there also exists a fairly stable structure of social worlds that transcend the differential demands of television, radio or newspaper journalism. In order to provide comprehensive coverage of what goes on in the wider world, within the constraints of time, space and complexity imposed by that media world and by the physical specifications of media formats, an elaborate system of divisions of labour has developed. The system of journalistic 'beats' is broadly familiar to most of us, whereby certain journalists specialise in the reporting of a particular topic such as politics, business or health, developing 'insider' knowledge of the area, and reporting on the area in the mainstream news. However, there are other divisions less visible in the public domain, such as the difference between news journalists covering the day to day unfolding of events and those who work on more detailed 'features' stories, investigation and analysis. Another important one is the division of labour between journalists and editors, who must make decisions about which material reaches the public domain and how it should be presented. All of these have had effects upon

the media treatment of evolutionary psychology, and each world, with its differing priorities and modes of practice will be explored here.

6.2.1 Science journalists and generalists

> I have this great fight with scientists, who think that newspapers are there to educate the public about science, and curiously, my news editor doesn't actually say that to me, in the morning, you know, 'what shall we educate the public about today?'
> (Respondent 15 - science writer, broadcaster: interview, 22/01/02)

The generalised media practice of dividing up journalists' work into a number of specialised subject areas, or 'beats' is familiar to most people, particularly from its use in daily televisions news. Most media forms that deal with news have some form of journalistic beat system, even if fairly basic and informal, dividing news into areas such as 'politics', 'health', 'economics' and the like. More detailed formats and larger organisations such as the broadsheet press are more likely to have further specialists, handling subjects like social affairs, environmental issues, technology and the like. However, the system is not a rigid one, and a good proportion of stories are written by generalist journalists, or whoever happens to be free at the time. Within this system, science journalism is very well established and institutionalised. Particularly in the US media, and to a lesser but increasing extent in the UK, science journalists are relatively powerful, autonomous actors, who have carved out a professional space in which they are deferred to as having the necessary expertise to handle the perceived complexities and difficulties of reporting 'science'.

As a group, science journalists co-operate very closely with each other and with their sources (scientists), sharing information to a much greater degree than is generally seen in the media (Dunwoody, 1986b). In fact some authors have argued that this leads to the profession being overly aligned to the interests of scientists and their institutions, with a consequent lack of critical engagement with the subject matter, and of variation in the reporting of science (Dornan, 1990; Nelkin, 1987). Although such arguments may be somewhat overstated, as this kind of co-operation is frequently seen in other specialist journalistic areas, science journalists do place a strong emphasis on trust relationships with their sources, and also exercise an unusual amount of autonomy, especially in the broadsheet press (Hansen, 1994). Despite the finding that evolutionary

psychology stories were rarely authored by science journalists, the existence of this system has been of crucial importance in shaping the media coverage of EP. Science journalists see an important part of their job as acting as a kind of 'quality control' agent on which scientific claims get aired in the media, using their in-depth knowledge to assess the credibility of claims and deciding whether and how to report them (Hansen, 1994, p122-3). This was something that came through strongly in my own interviews with science journalists, who would describe how they would deal with such considerations when writing about evolutionary psychology. Science journalists felt that EP claims had a strong appeal and potential for making a 'good story', but that this must be balanced against the perceived credibility of the claims being made.

> It's [EP] absolutely wonderful stuff, because you can explain it, it makes a good story, it's got flavour, and it's got the essential delightful quality of near-loopiness that most, you know that all the best science has. It doesn't mean I believe it. We are reporters, we report what scientists claim, although we have a filter that says 'if it's crap or dangerous crap, we ought to actually say so or not report it.' In the case of evolutionary psychology, it's almost certainly never dangerous, and it may even be right, who are we to say.
> (Respondent 17 - science journalist, broadsheet press: interview, 02/09/01)

Frequently, they would compare these practices (favourably) against what they saw as the less critical practices of other journalists and media professionals, highlighting the more responsible position they saw themselves as holding.

> So if you are a working science journalist, you are incredibly careful, you're not going to say things which sound like genetic determinism because you know that it's more complicated and people will always grab the wrong end of the stick. Now, I don't know if readers are very worried about that [...]. But science journalists do think about the wider implications, and they do try to stay clear. Other journalists, no, other journalists are all, "well, it's a great story."
> (Respondent 1 - author and freelance science journalist: interview, 30/07/02)

> But this accuracy in the case of say, a report based on something I've read in *Nature*, consists only of reporting what the guy said in *Nature*, I don't care whether his finding's correct or not, if it's interesting I'll report it. If I think it's dodgy, I'll go to someone who I know believes different, and give a quote from him as well, but it still would be a fact of an attempt to report what is out there. A columnist has no such inhibition. A columnist is perfectly capable of completely misunderstanding what somebody says and then writing a column about it, it doesn't mean that the column itself is rubbish, although it usually is. A column is a sort of dandelion clock of thinking, you know, you just pick it up and you idly blow things off and think "tinker, tailor, soldier... ooh!, well I never! I'm going to marry a plumber!" And then you throw the thing away.
> (Respondent 17 - science journalist, broadsheet press: interview, 02/09/01)

Although the journalist quoted above did not regard EP as 'dangerous crap', other science journalists might have done so, and therefore chosen not to write about it, just as happens with reporting of the social sciences. This was well recognised by other actors in popular EP who span academia and journalism, who could see the differences in how their work was handled by different kinds of journalists.

> Well to some extent I think it reflects the actual background of science journalists, because certainly a few of them are psychologists, but many of them are actually trained as mathematicians, physicists, so they're more comfortable with hard science, and that's the world they know. To some extent they're going to leave the softer social science or Darwinian science to others who don't need a special training to write about it [...] I suppose it's also that they're covering what they would count as 'real science', you know, experimental tests of major scientific theories. Now evolutionary psychology doesn't have a theory to test, so it certainly doesn't fit that model of what a good story is in science.
> (Respondent 10 - academic author, sociobiology, Darwin@LSE member: interview, 01/10/01)

> Journalists can be, when they're good journalists they can be really challenging, they can ask questions that other academics wouldn't, they can force you to explain your ideas in more direct and simple ways, they can maybe challenge assumptions that academics would have already bought into [...] I don't think there's much difference between a good science journalist, you know someone who's maybe a researcher for *Horizon* or something, or *New Scientist*, and some academics, you know, working at that end of the spectrum like me. On the other hand, you know, there are the journalists who are just out for kind of sensational copy and that's very different. So I think it varies a lot.
> (Respondent 6 - academic author, evolutionary psychology, Darwin@LSE member: interview, 01/08/01)

The perception of social science as not requiring any specialist knowledge to be able to report about it was also carried through to evolutionary psychology, which was rarely carried in science sections and frequently written about by non-specialists.

> I don't think that, I don't think the media perceives this as *science*. The media doesn't perceive it as science, and yet validates it by putting 'a scientist says'... So it's pop psychology, that's what it is [...] because you're perceived not to require any science knowledge in order to write about it, so therefore it can be handed out to generalists with ease.
> (Respondent 15 - science writer, broadcaster: interview, 22/01/02)

Evolutionary psychology was paradoxically seen as 'science' (validated knowledge) and 'not-science' (covered by mainstream media, not science specialists) at the same time, particularly in coverage by non-science journalists. This was compounded by differences in how sceptical journalists could and did express their responses to evolutionary psychology. Following the trend seen with reporting of the social sciences,

sceptical science journalists would be more likely to dismiss the subject and simply avoid it by not writing about it. However, non-science journalists feeling sceptical about EP claims could have a difficult time challenging them because they were seen by other in the media as lacking the necessary expertise in science to do so, as described by this journalist, who generally writes about gender issues as a man ('bloke stuff'), in the press.

> But once you started to go into this area of evolutionary psychology, that was slightly different because this was *science*. The other stuff, the bloke stuff was sort of human interest, family, but science is something different and although I did write some pieces on this subject [...] It was quite difficult to persuade people that you were a person to do it, and quite difficult to persuade people that this 'new science' [...] quite difficult to persuade commissioning editors that *you* knew better than those people did, or that what they were saying was at least contestable, or even to bring to their attention the fact that there were other kinds of 'scientists' in this field who looked at it in a different way, people like the Roses, for example, Steven Rose. Quite difficult to persuade people that there was an argument going on.
> (Respondent 9 - freelance journalist: interview, 18/01/02)

'Canonical' understandings of science as objective knowledge are still current in the media, supported in part by these divisions of labour between science and generalist journalists. This is one reason why evolutionary psychology claims were more likely to be taken at face value in a way that claims in other areas of knowledge would not be.

> there is a kind of deference amongst journalists towards people calling themselves scientists, and this has deep roots. I now display my limited understanding of history here, but it seems to me that this has deep roots, in that science has always held itself up, and been held up as being above the fray, hasn't it? That it is objective, that it's not driven by cultural or political bias, and it's as if journalists consider that to be the case. (Respondent 9 - freelance journalist: interview, 18/01/02)

However, as was described in the quote before this, the intervention of other 'scientists'[5] in publicly critiquing evolutionary psychology, was very helpful for non-science journalists in their attempts at engaging with EP claims. Critical scientific views could be mobilised as an important resource when a 'lay' journalist's own opinions of EP were not considered adequate on their own. This would explain why I found that indicators of increased debate over evolutionary psychology (rising levels of scepticism and article

[5] The scientists and academics who emerged as critical of evolutionary psychology tended to come from related fields, but were not members of the 'core set' of evolutionary psychology (Collins and Evans, 2002). This was relatively unimportant for the media actors under discussion here, but *was* important for the dynamics of the controversy itself, and will be explored at greater length in the next chapter.

length)[6] increased greatly toward the end of the 1990s, as it was at this time that a wide variety of critical academics and authors emerged into the public domain.

6.2.2 News and features writing

As I highlighted earlier, another crucial difference between media coverage of evolutionary psychology and that of other sciences was in the amount of news coverage compared to other material such as feature articles, reviews, columns and so on. Like coverage of the social sciences, EP rarely appeared in science sections, but unlike the social sciences, it also rarely appeared in the news. This is because few evolutionary psychology stories were based around the publication of specific research findings, which is what most science and social science media coverage focuses on.

> The classic question you get from journalists, "well, what have you discovered?". I haven't discovered anything; I've just had an *idea!* [laughs]
> (Respondent 5 – academic author, behavioural ecology, evolutionary psychology: interview, 27/09/01)

Instead, most of the popular evolutionary psychology was focused on theory and ideas. This was an immediate response to seeing my findings about where in newspaper EP is covered.

> That's really interesting, that makes perfect sense though [...]. Because of course the science sections tend to be about actually scientific *results* and this stuff isn't about results, it's about ideas, and that's why it goes into there. And of course it's not in the main, because there's not big news stories, like there is about Dolly the Sheep and so on and so forth[...] It goes into the weekday supplements which are more relaxed, and more, you know about less immediately topical stuff, that figures. Yup, yup...
> (Respondent 13 - nonfiction publishing editor: interview, 22/01/02)

The way in which much of the media runs a division of labour between 'news' and 'features' writing, whereby ideas, opinion and cultural products are all usually covered as part of 'features', meant that popular EP frequently fell into the second category.

> just the mechanics of the newspaper make it almost impossible to say, 'so and so has had a really good idea', you have to say, 'so and so has had a really good idea, which you will find in this book'.
> (Respondent 1 - author and freelance science journalist: interview, 30/07/02)

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[6] See Chapter Four, section 4.5.3.

Evolutionary psychology stories were generally centred upon theoretical ideas and the implications of those ideas for, say, gender politics; the publication of books; or on specific figures in evolutionary psychology such as Steven Pinker. The categorisation of EP as feature material provided additional reasons for science journalists' avoidance of the subject, as the bulk of their work involves reporting on science news. Most science coverage in the press is provided by full time, salaried correspondents orientated to the daily cycle of news production. This cycle does not leave much space for the production of the more in-depth 'feature' type articles, and certainly not for the kind of public events that were often used to publicise evolutionary psychology. This science journalist describes why he rarely attended such events.

> because they're at five o'clock in the evening, and that is the time at which we in morning newspapers are at our most remarkably vulnerable. If there's a story, we're working on it, then, because the pages are going to close at seven. So going off to, we're always accepting invitations to things at five o'clock, and we never get to them, and I suppose people who have nothing else to do except write features go to them. (Respondent 17 - science journalist, broadsheet press: interview, 02/09/01)

In stead, they fitted far better with the rhythms of working on freelance features writing, which are less closely tied to this daily deadline. Freelancers produce two sorts of articles: commissioned articles written 'to order' for the newspaper, and self generated articles which must then be pitched to editors, who can then take or leave them at will. A particular feature article might well be a mix of the two, and can often feed back from one publication to another for quite some time.

> normally what happens is all the hacks turn up in the morning, they all wander in just in time for a morning conference, there's a big coffee machine and they read all the papers, and then they think, "we've got to react to this piece in the *Mirror*, in the *Mail*, in the *Telegraph*, who could react to this piece? Let's ring up X." Ten to one – "X, have you seen this piece in the *Mail* today? It's about this survey which says..." why men don't wash up or whatever. "Could you write us 700 words by four o'clock this afternoon?" "oh fuckin' 'ell, alright then".
> (Respondent 9 - freelance journalist: interview, 18/01/02)

Decision making about feature articles will of course be affected by the recent news agenda (often providing follow-up or in depth coverage of the previous days breaking news), as well as what is happening in the other media at the time.

> And I approached the *Observer*, this is where that was, saying can I do this piece, and they knew me, I've been writing for them for years, and they said alright, and off I went and I did it. But the reason that they were interested in it, that they were receptive to that idea, I think was partly because when they commissioned my piece

> they were in the process of deciding whether they wanted to buy an extract from Geoffrey Miller's book, *The Mating Mind*, which I mentioned, and there was another David Buss one, and there was this feller Tim Birkhead. And these were all coming out at the same time, and they were saying to me, "we were thinking of buying this [serialisation of] Geoffrey Miller one, you know and putting it upfront".
> (Respondent 9 - freelance journalist: interview, 18/01/02)

This second quote also illustrates the close relationship between book publishing and these areas of the press, noted already in Chapter Four. Book reviews, serialisations and other related articles can be planned weeks or months in advance and subsequently adapted to fit with the news agenda closer to the time. Evolutionary psychology has utilised such relationships to create a very different form of science in the media than that seen on a day-to-day basis.

6.2.3 Journalists and editors

The final division of labour crucially important for the treatment of evolutionary psychology by newspapers, as well as the other media, is that between journalists and editors. Journalists research and write stories, while editors are the central 'gatekeepers' in deciding which stories will be aired or published, as well as their precise form and location. As well as the main editor, who makes the large-scale and important decisions and runs the show, there will also be editors in charge of departments within the organisation (in the case of newspapers, this roughly corresponds to the sections of the paper). This hierarchy continues right down to the level of copy-editors, checking spelling and the like, and fitting articles into the space assigned to them. This generally means that journalists have little control over the final form that their work will appear in:

> Me: That time when you had the article changed, was that the editor coming back to you and asking you to do this, or did the editor just chop it?
> Interviewee: No, it just got cut, I filed it on time. There will often be a number of pieces competing for the same bit of space, something may happen overnight which they feel they may have to react to. You get a lot of that on the front of *G2*, a lot of reactive pieces. So there are all kinds of reasons why these things happen, it's not necessarily anything sinister, and I think they probably thought, "oh god, we've got room for three pieces, and there are four pieces we want to run, which we've got to run, can we move one of them somewhere else?". Well X's piece probably could be fitted into TV, better that than spike it. So in that sense I'm not complaining. And then it just gets handed over to a sub [editor], who cuts it to fit the space.
> (Respondent 9 - freelance journalist: interview, 18/01/02)

In particular, it is the editors, not journalists, who write the headlines that go with articles.

> I can't be the only journalist who on principle never reads headlines, because I know that they're lying, misleading, that I [the journalist] didn't write them.
> (Respondent 1 - author and freelance science journalist: interview, 30/07/02)

As well as dealing with these practical decisions about the final appearance of stories, it is also the editor's job to further shape the final output according to considerations of what they believe will appeal to audiences. This will affect the final content and emphasis of individual pieces, as well as decisions about which stories make it into the public domain and which will never be aired. These decisions are in part commercially based, but will also take into account factors such as value to the public interest and the current relevance of the piece in question. These kinds of factors can be described collectively as 'news values' and will be explored in greater detail in the next section. They are important in shaping the work of all media professionals, but are a particular concern of editors, who take the final decisions on the output of media organisations and are therefore ultimately responsible for content of that output.

Although the relationship between editors and full-time specialist reporters may be in some senses less imbalanced than the one with freelancers, the demands of specialist science coverage create their own tensions with editors. Editors can be journalists or ex-journalists, and although they may even have worked as specialists at some point in their career, they rarely come from scientific backgrounds. By the nature of their work, they must be more concerned with the wider picture rather than the concerns of any one specialist area, particularly a lower priority one like science. This conflicts strongly with the needs of reporting the sciences, which demand time and space in order to explain the complexities of the subject matter, never mind the research process itself (e.g. Friedman, 1986). These factors together mean that editors will favour stories about areas of research that they see as relevant or interesting to the reader, giving them a marked preference for the social sciences. These kinds of priorities mean that journalists will adjust their own output accordingly to increase the chances of their work seeing the light of day, as described by this science journalist.

> Sex and death sell. Simple. It isn't quite as simple as that, but I know, if I've got a story, I can put sex in the first two lines, then I'm more likely to get that broadcast. I

> don't have the final say on what goes on air, my job is to provide material to news or to programmes or whatever, to say this is what's, you know, this is interesting. To get an interesting spin, means it's more likely to get on air. Now I have the desire to get more stuff on air, justifies my job, pays my wage, is what I'm designed to do, my job is to get more science on air.
> (Respondent 14 - radio producer, science broadcaster: interview, 15/07/99)

These kinds of factors are crucial in understanding one half of the equation leading to the strong visibility of evolutionary psychology in the UK mass media. At the same time as academics, for reasons of their own, have moved to discuss evolutionary psychology 'directly' in the public domain (see Chapter Seven), media professionals have had equally powerful reasons for giving evolutionary psychology stories the airing that they did.

6.2.4 "A Good Story": news values and evolutionary psychology

One of the things that came through very forcefully in my interviews was the way in which evolutionary psychology was seen as a subject highly consonant with the values, interests and production processes of the media. In several different ways, EP was seen as a useful source of 'good stories' – ones which would catch the interest of readers, and which also fit well with various working practices within the media. An important concept in studies of science communication and of the media more widely which may shed some light on these assertions is that of 'news values'. Sociologists studying the media have developed this idea to help them understand the decisions that journalists and editors make about which stories to cover and how to report on them. News values, sometimes described as craft norms or story frames, are elements which make a story more likely to appear in the media (see Gregory and Miller, 1998, p110-4; Weigold, 2001, p166; Weiss and Singer, 1988, p144-9). Although the different social worlds of the media will place different emphases on the particular mix of news values they consider to be of importance, the wider concept is one shared amongst the media as a whole.

Some news values are to do with the shared working practices of the media on a day to day basis (Gregory and Miller, 1998, p110-4). For example, if a piece of research can be linked to a major news story running at the time, then it is much more likely to be reported. Sometimes this might be quite tangential to the main story (like research on

lying in the context of a story about government spin), but at other times the major story can itself be scientific, as in the BSE and GM episodes. A less extreme version of this could be seen in the above interview comments about freelance writing of 'reactive' pieces for newspapers. If several competing institutions (like newspapers) are all chasing 'exclusive' rights to a story, that will increase its value. If it is known in advance that an event will happen (like an election) or will happen on a regular basis (like the football season), this also helps editors and journalists to plan for coverage in advance of the fact. Examples of this in the reporting of science might include the publication of the first draft of the human genome in 2000, the hayfever season and the publication of books. A second set of values centres upon maintaining the legitimacy of the media to do what they do, i.e. be a useful and reliable source of information. So the 'facticity' of stories is of course important, as is the reliability of the sources used in writing them. Because of science's special status with regard to this, it scores highly on these grounds, especially with non-science journalists and editors (as discussed above).

A final grouping of news values are directly concerned with how the media perceive their audiences or readers and the preferences they hold (Weiss and Singer, 1988, p144-9). Most importantly, a story must be communicated absolutely as clearly as possible, in order to hold the attention of audiences seen as lacking in attention span, busy with other things, or reading for entertainment rather than, or as well as to gain information. Stories are also seen as requiring the values of meaningfulness, relevance and consonance. In other words, if a story is seen as easily understandable, interesting and relevant to 'ordinary' people's daily lives (such as a story about health), that helps make it a good story, especially if it fits with widespread beliefs about that issue. At the same time, it cannot be too 'ordinary' or it ceases to be news: another important news value is novelty, or something unexpected that will catch the attention. For similar reasons, the existence of controversy or argument over an issue will also increase its news value. Finally, if a story can be personalised by linking it to personal narratives and stories, this will also increase its news value. This feature can be seen most strongly in the coverage of medical research, which often opens with a personal 'story' of the disease in question. A content analysis of US media coverage of breast cancer found that coverage levels were closely associated with announcements by celebrities that they were suffering from the disease (Corbett and Mori, 1999).

An important point to remember is that these values actually bear very little direct relation to the *actual* preferences of audiences, as media professionals are often the first to admit.[7] However, the continued success of many media organisations, in commercial and other terms, suggests that they must be doing something right. Media professionals' assertions about audiences cannot be taken as a proxy for what those audiences actually think, but I believe that they can give some indication of the relationship between knowledge claims and wider publics. As well as this, such popular knowledge claims are made in the media, and thus will be directly shaped by news values, which may further shape publics' knowledge about a subject. Like any other profession, the media has developed its own rich resources of expertise, tacit and cultural knowledge about the work it does, and like any other profession, these can be studied sociologically. Such insights are at the core of any social worlds analysis, as I discussed in Chapter Three, and can help address why evolutionary psychology was good for the media, as well as why the media were good for evolutionary psychology.

Although science stories tend to struggle to overcome the barrier of news values, especially those around meaningfulness and relevance, by contrast evolutionary psychology stories tend to fit well into these media priorities. So the routine of book publications on evolutionary psychology topics, often teamed with public appearances by the authors (at Darwin@LSE or elsewhere), fitted into pre-existing media routines for covering publishing.[8] It also allowed for the kind of advance planning preferred by editors in the non-news areas of the press and helped evolutionary psychology 'gatekeepers' such as Helena Cronin to tap into networks of journalists, publishers and authors. The Darwin@LSE lectures also provided a regular routine for provision of these stories, while regular events such as Valentines Day, the Aventis (formally Rhone-Poulenc) Science Book Prize and the anniversaries of Darwin's death or *The Origin of Species* also provided story 'hooks' for evolutionary psychology.[9] Evolutionary psychology stories could be 'about', or attached to, other story frames such as gender issues; families and children; genetics or Darwinism and its influence in society.

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[7] See further discussion of this issue in Chapter Seven.
[8] See chapter 4, section 4.2.5.
[9] With regard to Darwin anniversaries, a similar effect was found for US media coverage of evolution more widely (Caudill, 1989).

The high public profile and personalities of Helena Cronin, Steven Pinker and Richard Dawkins meant that they enjoy or enjoyed a semi-celebrity status akin to that of Goodell's (1979) 'visible scientists', which helped to boost the news value of EP stories. In the early stages of media coverage, during the mid-1990s, the novelty of the EP label and the way in which evolutionary psychologists presented themselves also provided value to the story. Later, once evolutionary psychology had become an established or recognisable subject for discussion, then it could become a story in its own right that could circulate amongst various commentators. This process was aided by the highly controversial nature of EP claims, and subsequently by the appearance of open dissent amongst scientists themselves. As described above, evolutionary psychology enjoyed a curious status as simultaneously 'science' and 'not-science'. This acted as something of a double-edged sword with respect to the status accorded to evolutionary psychology knowledge. On the one hand, positive articles about EP could claim it as 'scientific' knowledge and therefore more certain, yet sceptical articles could easily challenge this status, particularly on the basis of criticism made by other scientists.

As well as these more structural factors which made EP attractive to the media, my interviewees were almost unanimous that the biggest single issue in understanding this attractiveness was to do with the news values of meaningfulness, relevance, and consonance.[10] As a subject, evolutionary psychology is largely concerned with the study of human, rather than animal, psychology, behaviour and society, with the majority of my informants settling on this as a comfortable boundary marker for the subject. In terms of popular discussion and coverage of the subject, topics covered have included the role of biology in behaviour, co-operation and selfishness, murder, child abuse, family structure, beauty, monogamy, adultery, sexual attractiveness (of men and women), sexual difference, sexual behaviour and the glass ceiling. In addition to this, many of these claims drew upon conventional or conservative understandings of gender, family structure, crime, and so on, helping EP to also meet the news value of consonance with common beliefs.[11] These could also be matched with less familiar

[10] Described above on page 226.
[11] These claims were described in detail in Chapter Five, section, 5.2.

ideas to score on the news values of novelty *and* consonance at the same time, as described here by this popular science author and columnist.

> Evolutionary psychology, when it works best in popularisation, it's doing the same thing [as Freudian theory did]. In other words it's saying, "here's something you thought, sort of knew anyway", you know, fear of snakes or sexuality, or something [...] it develops naturally, is kind of intuitive, and "here's some really weird ideas that you haven't thought of before", like the reason we have all sorts of problems in society today is because of a mismatch between the Stone Age personality and the modern world. So it's the mixture of the familiar and the new idea.
> (Respondent 16 - author and science writer: interview, 31/01/02)

Over half of the UK print media coverage of evolutionary psychology was about sexuality or gender issues in some form or other.[12] This emphasis is not confined to popular discussions of EP: of 30 studies cited in a review paper on the subject, 21 were about sexuality or reproduction (Buss et al, 1998). The comment that 'sex sells' was taken as almost self evident amongst my interviewees, and was seen as an extremely obvious way in which evolutionary psychology appealed to editors and audiences, as when I asked this journalist whether EP's discussions of sex affected its media coverage.

> I don't have to answer that one, do I? [gives me a sarcastic look] There is no subject about which humans are more interested in than sex, except possibly death, I mean you get more interested in death as you get older...
> (Respondent 17 - science journalist, broadsheet press: interview, 02/09/01)

Looking beyond the appeal of these specific topics in evolutionary psychology stories, many of the interviewees believed that the basic subject matter of EP (i.e. people) gave it an *intrinsically* higher news value than other science stories usually have.

> certain kinds of things make good reading, right? And for better or for worse, for humans, anything to do with humans is intrinsically more interesting than anything else in science, except for the possible origins of the universe.
> (Respondent 5 – academic author, behavioural ecology, evolutionary psychology: interview, 27/09/01)

Research subjects closer to humans were seen as more meaningful and relevant to people than research about the natural world, as well as being easier to understand.

> Biology proper involves sex, death, and disease, and so people are interested in it, no doubt about that, they really like sex, death and disease, because they are what I like to call a common experience. And so it's always easier to write stories about biology than it is to write stories about solid state physics. I know of no-one who cares about

[12] See Chapter Four, section 4.5.1.

> electron capture, I on the other hand don't know of anyone who *doesn't* care about sex, death and disease.
> (Respondent 17 - science journalist, broadsheet press: interview, 02/09/01)

These assertions were applied to media professionals and audiences alike, with interviewees moving from a generalised 'people' to 'journalists' and back again without really noticing. This reflects well the way in which journalists (and probably popular authors) tend to infer from their peers to the preferences of wider audiences (e.g. Gans, 1979, ch.7).

> Psychology is not a 'hard', in inverted commas, science. It's very difficult to get your head around some of the practicalities of nuclear physics or pure genetics or something like that, but most know how they feel and how they behave and psychology is looking at how people feel and behave. So the majority of people who would not normally look at science or consider science as a topic will look at psychology, and look at evolutionary psychology and actually say, "well yeah, that's sort of common sense isn't it? [...] so yeah, OK I can understand that, therefore I'm happy to put it on air." So non-specialists journalists are, I think, much more open to psychology and to evolutionary psychology than they are to other, 'hard' science topics.
> (Respondent 14 - radio producer, science broadcaster: interview, 15/07/99)

Interestingly, this kind of view was held just as, and perhaps even more strongly by the academics actors, who would even invoke possible evolutionary reasons for such effects.[13]

> I think, yeah, definitely it's the reason why, one of the reasons why it's such a popular topic, compared to other sorts of sciences, it does attract the stuff of everyday life, specifically the stuff of, well gossip in particular, and a lot of it's about sex, a lot of it's about violence, a lot of it's about human emotions, and they're all the things that, you know, grip us. And evolutionary psychology also has a theory about *why* they should grip us.
> (Respondent 6 - academic author, evolutionary psychology, Darwin@LSE member: interview, 01/08/01)

Many of these responses mention the idea that evolutionary psychology is somehow different to many other sciences. It is 'the stuff of everyday life', 'common sense', 'common experience' and so on, all comments turning upon the idea that EP is a subject with reflexive, or 'feeding back on itself' properties. As historian of psychology Graham Richards (1996, p7) writes, "To put it bluntly, Psychology is produced by, produces and is an instance of, its own subject matter". Not only psychology, but all

[13] To the effect that humans evolved as social animals, so therefore will be strongly predisposed to pay attention to the actions of other people (e.g. Dunbar, 1996).

research about people is necessarily carried out by people, and is of course communicated and popularised to people as well. This has had profound implications in the philosophy of science and social science, which have been discussed at great length for very many years (e.g. Hughes, 1990). More importantly for my discussion, it makes a big difference to the ways in which such subjects are communicated, and also to how the legitimacy of expertise must be constructed for these areas.

> Evolutionary psychology lends itself to popularisation in a way that say, inorganic chemistry doesn't. A.) We're talking about concepts that people are familiar with, like, sex and death and jealousy, food and all these kind of things; B.) everybody has their own sort of theories about it.
> (Respondent 16 - author and science writer: interview, 31/01/02)

Following Richards (1996), I will use the term 'reflexive sciences' to describe those areas of research and study that are 'about people' in this way. This is a descriptive term, related to, but meant differently than, for example, David Bloor's (1991) reflexivity postulate discussed in Chapter Three, section 3.5. Reflexivity in that sense is something meant normatively, as a way in which social researchers should be 'upfront' about their involvement with their own research material. In contrast, by describing a science as reflexive, I am not saying anything about how it should be carried out, I am simply observing that it has reflexive properties. I would argue that this would include not only the social sciences, but also *any* academic study of people, including the arts and humanities, as well as medicine and biology, although it would affect some subjects more than others.

Although my research can give no direct information on how the actual audiences for evolutionary psychology interact with reflexive knowledge, my interviewees described their own experiences of communicating the subject, as well as the interactions of peers and colleagues with it. Although it seems unlikely that audiences would be any different, in one sense the issue is unimportant, as it is largely the beliefs and attitudes of media professionals that shape media output. Therefore the fact that all these actors felt that EP was somehow 'different' to other sciences and found it easier to communicate on a popular level is still highly significant for understanding the case of popular evolutionary psychology. In the next section, I will explore the implications of this insight more fully, looking at the thoughts of some academics who have

addressed the issue, and offering some speculations on what this might mean for EP and other reflexive sciences.

6.3 EVOLUTIONARY PSYCHOLOGY AND 'COMMON SENSE' KNOWLEDGE

> While reporters and the public readily acknowledge that they are unable to judge the validity of information in the physical and biological sciences, *everyone is a psychologist or sociologist of sorts*. Consequently, reporters and readers may feel more confident to judge such information, more skeptical of it, more likely to make their own interpretations, and possibly more prone to trivialise or "editorialise" about certain research results.
> (McCall, 1988, p92; my emphasis)

> People are all experts about their own lives. And as social actors we engage with a range of other actors and institutions and therefore develop a unique set of knowledge from which to judge new experiences. Expertise is therefore not solely the province of professionals, but lay people have valuable knowledge and understanding of the social world which equips them to discuss the new genetics in a sophisticated and reflexive manner. As we have already argued, technical details are but a small part of this "stock of knowledge" and are far from fundamental to lay people's sociological intellect and imagination.
> (Kerr, Cunningham-Burley and Amos, 1998, p52)

In this section, I will demonstrate some of the ways in which popular evolutionary psychology overlaps with lay people's "valuable knowledge and understanding of the social world", showing how personal experience is frequently drawn upon when people interact with evolutionary psychology knowledge claims. I will then show how all sides in the EP debate have mobilised this kind of knowledge to make their arguments. Lay knowledge and experience was balanced against 'scientific' expertise, with actors using the two forms strategically according to their personal status, attitudes to evolutionary psychology, and what stage the debate had reached at the time. I will then go on to try and examine in more detail this domain of 'everyday' knowledge, reviewing the ideas of some authors who have touched on it in their work. There are important distinctions between knowledge and expertise, but these are perhaps insufficiently worked out when it comes to these kinds of areas of informal knowledge. Finally, I will pick up these ideas in the context of popular evolutionary psychology, and explore some of the possible implications for constructions of expertise in, and communication of other reflexive sciences.

6.3.1 Expertise in the evolutionary psychology debate

> Unsentimental social scientists and veterans of the singles scene agree that dating is a market place. Everyone agrees that Mr. or Ms. Right should be good-looking, smart, kind, funny and rich.
> (Steven Pinker, 'Passion Ploys', *The Guardian*, 13th February 1999)

> Only an ideologue would now deny that the Stone Age – indeed the heritage of being a mammal – has left different marks on men's and women's psyches. Men are more fascinated by violence than women. Men are attracted to war films, contact sports and field sports in the same way that women are drawn to other people's babies, shoe shops and romantic movies. Of course, there are exceptions, but such generalisations still hold.
> (Matt Ridley, 'Violence: let it all out or keep it buttoned up?' *Daily Telegraph*, 14th September 1999)

> I have spent my entire adult life engaged in a quest to understand not just *who* I am but *how* creatures like me came to be. [...] What does it mean to be born a mammal, with an emotional legacy that makes me capable of caring for others, breeding with the ovaries of a primate, possessing the mind of a human being? What does it mean for a woman to have descended from ancestors who spent the Pleistocene [...] trying to gather enough food to stay fed and also obtain enough help from others so that her offspring would survive and prosper? What does it mean to be all these things embodied in one ambitious woman?
> (Sarah Blaffer Hrdy, Preface to *Mother Nature;* 1999)

These three statements all come from writers of popular evolutionary psychology, and they illustrate some of the ways in which actors in this debate have drawn upon non-academic forms of knowledge when discussing the subject. There are several forms in use here, the most familiar being 'common sense' knowledge, or widely held cultural beliefs about people (e.g., 'men are more fascinated by violence than women'). Closely related to this is the way such common knowledge can be invoked through creating a shared perspective between author and reader ('everyone agrees that...', or the use of the pronoun 'we'). Another form of knowledge in use is that gained from personal experience, or from being a particular kind of person: so when Sarah Hrdy says, 'What does it mean for a woman to...', or uses the term 'embodied', it is crucially important that she herself *is* a woman.

As I have described above, evolutionary psychology is a reflexive science: about people and carried out by and for people as well. There is no escaping this circularity, but academics in such areas can do things like using technical language, emphasising special methods of knowledge gathering and stressing the importance of special forms

of education and training to distance such subjects from the everyday world and legitimise their claims to expertise.[14] These are tactics seen in all areas of expertise, but sciences about people must work extra hard to do this because of this crucial reflexive difference. If this is the case, then why do evolutionary psychologists use everyday language, common sense and personal experience so strongly? The answer lies crucially in their location in the popular domain – as evidenced by the literature on science and the media and by my interviews with media professionals discussed earlier in the chapter. When communicating outside of a specialist area, practitioners must adopt ordinary, jargon-free language or they will simply not be understood. When working at a popular level, scientists must utilise the media's understanding of 'what works' in communication, particularly the news values of meaningfulness, relevance and consonance.

The subject matter of evolutionary psychology makes it particularly easy to do this, and so practitioners in the area can and do take advantage of the situation, pushed as they are towards popular appeals by their internal situation in academia (see Chapter Seven). However, this also makes such a strategy risky for experts in such reflexive sciences: if their subject is so like ordinary knowledge, then what makes it special or any more believable than what anybody else says about the matter? The work of Maarten Derksen discusses how psychologists have negotiated precisely this dilemma in popular work during the late 19th and mid 20th century (1997) and again in a popular science book of the 1990s (2000). The two domains of expert scientific knowledge and what Derksen describes as 'common sense' are balanced strategically, with practitioners drawing on the former when they need to appeal to the public domain and on the latter when needing to appeal to colleagues or emphasise the 'specialness' of psychological knowledge. On the whole, Derksen argues that psychologists engage in deft boundary-work[15] against the domain of common sense in order to always present psychology in the best light and reinforce its legitimacy as a science.

In order to balance their extensive use of everyday language and ideas, evolutionary psychologists trade strongly upon their status as 'scientists' in the public domain, as

[14] See, e.g., Faulkner, Fleck and Williams (1998)
[15] See in-depth discussion in Chapter Seven.

described above. This is done most obviously through their adoption of Darwinian theory from the realm of biology and the utilisation of 'evolutionary' as an adjunct to 'psychology'. The label implicitly suggests that the rest of psychology is *not* evolutionary and therefore perhaps less scientific, a point then backed up in evolutionary psychologists' rhetorical attacks on the rest of the social sciences. The point is finally underlined by scientific language such as 'research has shown that', discussions of genes and genetics, and an emphasis on the quantitative nature of evolutionary psychology research.[16] However, these tactics cannot entirely neutralise the risks of evolutionary psychology's co-existence with, and movement into, the realms of ordinary knowledge. A major consequence of this is that, as many of my interviewees pointed out, the boundaries of expertise around EP are seen as much more permeable than other sciences: it is acceptable, even desirable for non-experts to comment on the subject.

> evolutionary psychology is one unique area where any intelligent person can get to grips with the subject really pretty easily, and make significant contributions, not only to explain well what other people are saying, but actually again and again come up with good ideas of their own.
> (Respondent 10 - academic author, sociobiology, Darwin@LSE member: interview, 01/10/01)

However, this is not always seen as a positive outcome by all academics working in the area, who see their own legitimacy as experts being undermined.

> It's not just that everybody's interested in human nature, they also feel they know about it, and they have very strong views about it! And if I were a cosmologist sitting at a dinner party and I told them what I was working on, they wouldn't say, "Black holes! You don't know *anything* about black holes, I can really tell you about it..." or whatever, nor, indeed would they say "Black holes! They're utterly immoral! Well how can you work on them?". Obviously, they wouldn't say either of those things. But as soon as I mention that I'm working on Darwinian theory, everybody tells me I'm *completely* wrong, I don't know *anything* about human nature, and they'll tell me *exactly* what they know, because their sister's friend's whatever, and they once met somebody who, or they once read a book...
> (Respondent 3 - academic author, evolutionary psychology, Darwin@LSE member: interview, 23/01/02)

As we have seen from the content analysis work, substantial numbers of 'non-experts', in the form of non-science journalists and other commentators have contributed a great deal to the evolutionary psychology debate in the UK media. Much

[16] See Chapter Seven for a full discussion of evolutionary psychology's relations with the rest of the social sciences.

of this coverage was fairly neutral, simply reporting on the arguments made by academics (often from books) and sometimes balancing these against the criticism or scepticism of other academics. However, many of these writers moved beyond this and into the patterns used by the academics themselves, of invoking 'common sense' knowledge, what 'everybody' thinks, and personal experience to support or refute the claims of evolutionary psychology. Interestingly, many of these articles would also invoke several different forms of expertise in a single article. For example, a review of Robert Wright's *The Moral Animal* (1995) started by discussing advice given the author by her grandmother:

> Mami Simone, as she was known, liked to dispense advice over a small pastis, "You talk too much," she'd say, "Don't. Men prefer women who are modest. Always have several admirers at once, and never sleep with a man until..." She would pause, and count on her fingers. "Until you've been on one, two, three dates." It was the sort of admonition that made me want to thump her... Turns out, it was probably Mami Simone, after all, who was right. Or something like Wright. Robert Wright comes from an honourable tradition of scientific thinkers...
> (Fiammetta Rocco, 'Granny knows best', *Independent*, July 2nd 1995)

A common format in such articles would be to start with a traditional 'expert' in these affairs (like a grandmother), or a source of common knowledge like a folktale[17] or 'everybody knows X'. The article would then move on to introduce the evolutionary psychology claim under discussion, and then provide some kind of assessment of its validity. This would invoke a number of other authorities in agreement or disagreement with the EP claim, including other academics, but also agony aunts, novelists (especially ones who have written 'in the area' like Jilly Cooper or Fay Weldon), social workers or religious figures. Another strategy, sometimes combined with this one in book reviews, would be to have one of these 'lay' authorities review an EP book. For example, there were two instances of models reviewing an evolutionary psychology book on beauty, *Survival of the Prettiest* (Etcoff, 1999).

A second variation on this theme would actively pit the scientific authority of the evolutionary psychologist(s) directly against these other forms of expertise. This reached its apex in the coverage of the evolutionary psychology book entitled *A Natural*

[17] Evolutionary psychology work on step-parenting and child abuse specifically invokes the story of Cinderella in this way, see Daly and Wilson (1998), *The Truth about Cinderella: A Darwinian View of Parental Love.*

History of Rape (Thornhill and Palmer, 2000), which sets itself up directly as an argument with feminist analyses of rape. This handed journalists an obvious and attention-grabbing way to write about the book, by using quotes from the evolutionary psychologists, followed by (usually annoyed) commentary from feminist academics and workers in rape crisis centres. In this case in particular, the coverage had another aspect to it whereby the stories and opinions of rape victims were also cited as another form of 'authority' on the subject. In addition, these stories were written to highlight the gender politics of the subject, emphasising Thornhill and Palmer's white, male, American status and pitching their scientific knowledge as abstract and inappropriate.

> It was Thornhill's work on the mating habits of the scorpion fly that lead him to think that rape might be an evolutionary adaptation in our own species. Male scorpion flies have a 'notal organ' – a kind of clamp whose only known function is to immobilise female flies for forced mating, and Thornhill now concludes that a similar 'specialised rape organ' also exists in the human male psyche.
> (Amelia Hill, 'Rapists' Charter or Theory of Evolution?', *Scotland on Sunday*, 27th February 2000).

Evolutionary psychologists also use this tactic (here with reversed genders) when arguing against their academic opponents, by suggesting that 'ordinary people' already know what 'intellectuals' are 'refusing to admit to'.

> These great minds [*social scientists*] are unmoved by glaring evidence for human instincts: that human beings get hungry whatever their culture teaches; that they universally learn to speak language without being taught (an instinct), but have to be taught to read and write it (not an instinct). No matter. My point is not to retread the argument, but to emphasise how often the common sense of the man in the street can be superior to that of intellectuals.
> (Matt Ridley, 'Life is anything but a fairytale for stepchildren' *Daily Telegraph*, 25th November 1996)

By contrast, the (female) victims, feminist academics and rape crisis workers were all represented as having more legitimate knowledge about the issue, based on their firsthand experiences.

> Such remedies [as were suggested by T & P] are dismissed by Mary Koss, an authority on rape at the University of Arizona. "Dr. Thornhill," she says, "has obviously never stood up before a group and given a rape prevention talk."
> (Jerome Burne, 'Is the unspeakable truth about rape that it is natural?' *The Sunday Times*, 23rd January 2000).

The rape example brings up a second form of expertise mobilised in the evolutionary psychology debate: personal experience, opinion and anecdotal evidence. These could be used equally well to support or to compete against evolutionary psychology claims, but were most often used by sceptics, particularly by those lacking conventional expertise in the subject (i.e. non-science journalists).

> Sorry to bring this up, but I think I've got a problem with mating. The thing is, since taking up with my partner five years ago, she is the only female I've managed to impregnate. True, I've done it twice, but if I'm to maximise my chances of generating offspring that survive and thrive, I should be putting it about more. And that's my problem. I don't want to get any other women pregnant. Is there something wrong with me? Is my male programming faulty?
> Before anyone starts wondering if they're reading some weird hybrid of *New Scientist* and *Loaded*, let me reassure you I'm simply reflecting on evolutionary psychology - the new black of science fashion.
> (Dave Hill, 'Talkin' 'bout my evolution' *The Guardian*, 7th October 1999)

Articles of this kind also often utilised that most un-academic of cultural forms – humour, to delegitimise evolutionary psychology claims, often to great effect.

> Geoffrey Miller [argues] that all politicos are simply in business, "to increase their sexual capital." Let me just say two words here: Robin Cook.
> (Suzanne Moore, 'Natural deselection', *Independent*, December 4th 1996)

> The work of Dr. David Buss [...] concluded that there was a personality profile of the adulterer. Based on this profile (it was claimed), one should be able to discern... whether one's partner was likely to stray. In fact, one might be able to tell simply from going out to dinner. For signs included arriving late, looking in the hall mirror, interrupting others, going to the loo and leaving the door open, and – most revealing of all – driving past squashed animals and laughing callously [...] So far, so good. But suppose that you were entirely innocent of wrongdoing, yet – one dark night – giggled at a joke that you'd heard some hours before, just as you'd passed a flattened badger? Your wife or husband (an avid Mail reader) slams on the brakes, screeches to a halt, turns to you and snarls, "Who is it? I know you're having an affair!" Very nasty.
> (David Aaronovitch, 'Tell-tale signs of the adulterer. Is it all a load of gonads?' *Independent*, October 4th 1997)

> And are the burghers of Vienna aware that Dr. Karl Grammer, their neighbourhood ethologist, is using money that could be spent on building a monument to Kurt Waldheim on getting women to sniff sweaty men's T-shirts so that he can prove that, "Females dislike male smell. But they lose this negative emotional attitude towards male smell at the point of ovulation"? [...] Dr. Grammar, who may be some sort of fearless satirist – Vienna's Chris Morris – even dreamt up an experiment where he made men inhale the aroma of vaginal mucous while they assessed the attractiveness of various females. Grammar must spend large portions of his life slapping his forehead and telling friends, "I never though that they'd fall for the vaginal mucous experiment, but they did! Now, do you think I can get away with a new sexual research programme involving farm animals and ripe fruit?"

(Joe Joseph, 'TV Review: Where did all these sex experts come from?' *The Times*, 17th November 1998)

What these pieces are doing is actually just the same as the reporting of *A Natural History of Rape* – juxtaposing lay and scientific knowledge, frequently about sexuality and/or gender. They also expose a very intriguing phenomenon that recurs again and again with evolutionary psychology, which is the almost automatic way that people (including scientists themselves) compare the scientific knowledge claims with their own personal situation and experiences.

> There was a paper came out in *Animal Behaviour* [an academic journal] a few years ago when I was at Newcastle, about the symmetry of various body parts of people and correlating this with partners' orgasms and blah, blah, blah. And this engendered this massive discussion at coffee, most of the people there were men, most of them said, "oh what a load of rubbish", and then sort of sat there doing this [looking at own body], saying "oh, my wrists are symmetrical", or, "my face is symmetrical" or whatever… (Respondent 8 - academic - behavioural ecology, sociobiology: interview, 24/07/01)

It does also seem that, certainly in the popular domain, people also tend to assess the validity of such claims in accordance with this kind of personal knowledge.

> Like most people, all I can bring to this is my own experience of the world and what books and what writings do I find most persuasive. And I always find Lynne Segal, and R. W. Connell more persuasive, when they look at gender relations and they look at men and women and how they relate and so on. I always find them more persuasive, it always just rings much truer, you read something and think, yes, that says it, what I've been trying to sort out in my mind, that resolves the problem. And those people do it, and the EP people do not.
> (Respondent 9 - freelance journalist: interview, 18/01/02)

A final rhetorical strategy in use in evolutionary psychology debates invokes a particular form of knowledge, but it would not be quite accurate to call it expertise *per se*. It was seen most strongly in the *Natural History of Rape* case, where there was a strongly gendered dimension to the discussion. In general, the views of women about rape were almost automatically seen as more valid than those of men: there were no interviews with actual rapists, Thornill and Palmer's status as men counted against them, and many of the more critical articles were written by women.

> However, the new evolutionary approach to rape fails to impress workers at the London Rape Crisis Centre. "Written by a man this book, was it?" asked Roisin Richmond, a counsellor. "If its all about sex, how come so many rapists now use a condom and take it away afterwards?".

(Jerome Burne, 'Is the unspeakable truth about rape that it is natural?' *The Sunday Times*, 23rd January 2000).

There was little surprise in the news that the biologists Randy Thornhill and Craig Palmer have been having something of a tough time. Their area of expertise, rape, is a subject on which only a brave or foolish man will offer any kind of opinion.
(Terence Blacker, 'Courtroom drama proved that rape was about power' *Independent*, 25th February 2000)

The most extreme version of this phenomenon was seen in discussions of rape, but it was also a common thread through much of the EP coverage concerned with sexuality and/or gender (i.e. quite a lot of it). In particular, the majority of sceptical responses to EP claims came from women and feminist journalists and authors, who readily mobilised their lived experiences of gender to argue against the EP version of events.

This is a sophisticated adaptation of the old biological argument that women are naturally monogamous, while men are polygamous – a theory which could never be made to fit real experience. All those promiscuous men were clearly having sex with someone, even if their female partners were reticent about admitting it in surveys. [...] Evans, like others in his field, is still puzzled as to why women would adopt a strategy which might leave them literally holding the baby. "But what advantages could women derive from casual sex?" he wonders. The answers he comes up with are unintentionally hilarious, as well as suggesting it has not occurred to him to ask any of his female acquaintances.
(Joan Smith, 'Casually speaking, we like sex too', *Evening Standard*, 5th October 1999)

Particularly in the political climate of the UK centre-left broadsheet press,[18] the views of men on these issues were often seen by themselves and others as of little importance, as evidenced by this reaction to an interview question about gender politics and evolutionary psychology.

I work for *The Guardian*. What do *I* know about these things? I keep my mouth shut on gender politics because who am I to have opinions on gender politics, I'm a chap!
(Respondent 17 - science journalist, broadsheet press: interview, 02/09/01)

Again, this strategy was also utilised by evolutionary psychologists themselves. In particular, Helena Cronin's visibility in the media as a 'frontwoman' and spokesperson for evolutionary psychology helped considerably in defusing accusations of sexism. As I discussed in Chapter Five, some versions of today's feminism and of evolutionary psychology are actually highly compatible, and have co-opted each other extensively in recent years. This has sometimes made it more difficult for men to mobilise liberal political arguments against evolutionary psychology.

> Helena [Cronin] absolutely thinks of herself as a feminist. And there's nothing that enrages her more than people claiming that evolutionary psychology is sexist, and there I am completely on her side, as an individual, because I think the idea of accepting that our evolutionary psychology influences men and women to behave in different ways, needs to be sexist, is crap. Now Stephen Jay Gould, were he here, might say, on the one hand he might think it actually *is* sexist, and is motivated by sexism, a little difficult to argue that with Helena face to face, given that she *is* a woman, and so on and so forth…
> (Respondent 13 - nonfiction publishing editor: interview, 22/01/02)

In this section, I have documented the ways in which actors in the evolutionary psychology debate have mobilised different forms of 'everyday' knowledge to support their arguments about EP claims. In this debate, there are both academic and lay actors arguing both for and against evolutionary psychology; and both academic and lay knowledges were mobilised by all of the actors concerned. However, there were some trends to be discerned in the seeming free for all. In particular, 'scientific' knowledge and discourse were utilised more often by the proponents of evolutionary psychology, which is unsurprising considering the subject's need to construct itself as legitimate science. The various forms of everyday knowledge were mobilised more often by sceptics and opponents of evolutionary psychology, particularly non-academics and non-science journalists, who lacked legitimacy in arguing against EP on its own ground.

6.3.2 'Lay' and 'experiential' expertise, or 'common sense'?

I have now demonstrated how in the evolutionary psychology debate that took place in the UK media in the 1990s, several different forms of knowledge about social and human life were mobilised. Rather than discussing only the technical details of evolutionary psychology theories and research studies, all of the actors drew upon other 'everyday' forms of knowledge and expertise such as common sense, folktales, grandmothers, agony aunts, personal experience, anecdote, opinion and authority based upon identity. I will now attempt to review the somewhat disparate academic literature which has addressed these phenomena as forms of knowledge. Based upon these discussions, I will then try to 'sort out' these various forms and start to get to grips with what exactly this domain of the everyday that evolutionary psychology strays upon might be.

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[18] Which was of course evolutionary psychology's 'home turf', see Chapter Four, section 4.2.4.

Maarten Derksen's (1997; 2000) work on the history of popular psychology has already been mentioned earlier in the chapter and so seems to be a sensible place to start. Derksen describes how psychologists perform rhetorical 'boundary-work', strategically working the differences and similarities between psychological knowledge and what he describes as 'common sense' knowledge. The two areas are balanced by psychologists, according to the current situation, in order to show the discipline in the best light possible at the time. For example, the commonality between psychology and common sense can be emphasised by making statements like 'we all do psychology', but then arguing that academic psychology is different because it is conducted in the specially controlled space of the laboratory. It was partly Derksen's work that first alerted me to the possibility that something like this might be happening with evolutionary psychology, and some of my interviewees certainly thought that it was common sense knowledge that EP often moves towards.

An alternative formulation of common sense as lay knowledge or thought is seen in social psychology research on 'folk psychology' (see, e.g. Churchland, 1984; Stich, 1983). This area of research seeks to understand how 'ordinary people' think about the world as an insight into processes of cognition. However, it would seem that such a concept would be highly problematic for my own work, where I am aiming to understand the relations between lay and expert knowledge partly by addressing the two areas symmetrically and equally. In contrast to this approach, psychologists tend to be highly critical of 'folk' thought as irrational and deficient, and often tend to compare it directly against the superior rational faculties of their own psychological thought. As Maarten Derksen (2000) points out, this approach often amounts to further boundary-work carried out on the part of psychology, designed to bolster the status of the discipline. In his study of common sense knowledge in the form of proverbs, Steven Shapin (2001) also documents the recurrent use of this strategy by scientists and philosophers since the Middle Ages, whereby 'ordinary' thought is disparaged in order to contrast it with the virtues and wonders of learned knowledge.

Even if we stick with the term 'common sense', this only really describes one of the forms demonstrated in use in the EP debate. For example, knowledge based upon

personal experience can be, and is frequently used to make a case against widely held beliefs about something, e.g., "everybody thinks that the moon is made of green cheese, but *I* went there and saw that it wasn't". As I described above, this kind of knowledge is very frequently mobilised by both proponents and sceptics when writing in the media about evolutionary psychology. As an alternative, I will turn to the work of Kerr, Cunningham-Burley and Amos (1998) which I quoted from at the beginning of this section. In their research on the new genetics, they looked specifically at what lay people understood about genetics, and how, through a series of focus groups. They concluded that so-called lay people, despite having no formal education about the subject, displayed a sophisticated grasp of the issues and often mobilised their own knowledge about the social world in demonstrating this. Kerr and her colleagues described the ability to do this as 'lay expertise', a term purposely intended to balance against traditionalist 'deficit' models of the public understanding of science[19]. These descriptions of lay expertise are important and compelling and the concept has been taken up and utilised to great effect in medical sociology, as well as in PUS research itself.

However, the concept of lay expertise still seems somewhat broad in comparison to the complex and nuanced uses of lay knowledge I have seen in the evolutionary psychology debate. Also, as Collins and Evans (2002) point out, the term is in itself an oxymoron, as how can a 'lay' person (which means someone *without* expertise) be described as an 'expert'? At the same time, there most definitely are persons who might be described by *scientists* as 'lay' people, but undoubtedly have a great deal of expertise in their own domains of practice. Collins and Evans point up the expertise of Cumbrian hill farmers about the ecology of hill sheep exposed to radioactive waste as an example of this kind of expertise.[20] In amongst their very extensive discussion and categorisation of different kinds of expertise, Collins and Evans argue that such people should be referred to as 'experience-based experts' (p238). It would seem that this captures perfectly what actors in the EP debate are doing when they are citing their own experience of the social world to support or cast doubt upon the knowledge claims

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[19] See Chapter Two, section 2.2.1.
[20] This example was taken from Brian Wynne's classic study of sheep farmers after the Chernobyl disaster (1992).

made by evolutionary psychologists. So the description of 'experience-based' or 'experiential' knowledge or expertise would seem to be useful, alongside 'common sense', as a term to help understand people's knowledge of the social world.

But yet again, these terms still do not completely describe all the instances seen in arguments over evolutionary psychology. What is happening when women such as Helena Cronin or female journalists use their status as women to confer legitimacy on their arguments about gender politics and evolutionary psychology? Or when men defer to these tactics, and choose not to assert their own opinions on these issues? It is not simply that these women are highlighting their own experiences as women to make their points (although this is happening), or that they are emphasising quite how female, feminine and/or feminist they are (although this is also often happening). What seems to happen is that the simple fact of *being* a woman or a man changes the legitimacy of what is being said about the issue. This is, of course, a kind of reversal from the general state of affairs when women and men make arguments about the world, and in part it reflects the changes wrought by feminism through the 20th century. However, there have also traditionally been certain areas of 'expertise' assigned to women by society, such as the stereotypical motherhood, caring work, the home, etc. etc. It could be argued (disturbingly) that the domain of gender politics is now considered to be another part of 'women's work', reflected in the common belief that gender issues are the concern of women and *not* men.[21]

In any case, it seems that legitimacy is being conferred simply on the basis of certain properties of a person's identity as well as on the basis of their experiences. In his work on UK parliamentary debates in the 1980s over the issue of embryo research, Michael Mulkay (1997) reports a very similar effect. Although like most parliamentary debates, the embryo research debate was dominated by men, in this context female MPs often asserted their status as women to give 'distinctive testimony' on the issues at hand. "Women understand these matters in a way that men do not, because they deal with them in their daily life. They menstruate, conceive or do not conceive, worry about whether they will have children…" (quoted in Mulkay, 1997, p83-4). Mulkay describes this as 'a rhetoric of women's experience', which would make it simply a special variant

[21] For further discussions of evolutionary psychology and contemporary gender politics, see Chapter Five.

of the experiential expertise described above. However, I would argue that this rhetoric is based on not only personal experiences, but also on the fact that such experiences are generally *only* available to women. Therefore, in such a context, a person only needs to assert the fact of their identity to gain extra standing for their argument. It is, of course, precisely these kinds of arguments that essentialist feminists tend to make, as do evolutionary psychologists themselves. It is probably best not to get too bogged down in such arguments, but it is worth observing that this rhetorical strategy tends to work best with identities widely believed to have some kind of 'essential' property to them, such as gender, race and sexuality.

A possibly useful term for this third form of knowledge, so frequently intertwined with experiential knowledge, might be 'authenticity'. Brown and Michael (2002) describe how politicians and other decision makers get past public demands for transparency in governance and the problems it entails by representing 'authenticity' in their decisions. It is argued that actors do this by displaying how difficult it was to make a decision, and the suffering that the choice involved. Although the ins and outs of whether this is a valid strategy for technical decision making are irrelevant here, the idea that a person's testimony can be rendered more valid through such authenticity is quite suggestive. A simple way of putting things would indeed be to say that arguments about EP and feminism are widely considered to be more authentic if a woman makes them. A similar situation was reported by Hargreaves, Lewis and Speers (2002) in their study of UK media coverage of the MMR vaccine, climate change and cloning/genetic medical research issues. They found that members of the public were used as sources in stories about twice as often in MMR and cloning stories compared to climate change. 70% of these 'public' sources were parents, who were conferred expertise seen to have a bearing on the MMR and cloning issues (about reproduction and childrearing issues).

Finally, it might be worth having a brief discussion about the differences between knowledge and expertise, as it is quite easy to end up sliding between the two terms as if they are synonymous, which they aren't. In terms of this discussion, knowledge is information, which anyone can have or not as the case may be. The status or existence of knowledge does not necessarily say anything about the status of the knower: only one person may know something, or the whole of humanity can too. A person who knows

something is not necessarily an expert, but a person in possession of restricted and legitimate knowledge probably is: expertise is a status conferred on a person. An expert is also someone who can use knowledge appropriately, so as Steven Shapin (2001) discusses, proverbs become valid common sense knowledge when they are used in an appropriate context by a person considered to have enough experience of life to do this. Another term for this kind of lay expertise might be *wisdom*: which brings us back again to grandmothers and folk tales in evolutionary psychology debates.

Whether all of this helps us understand what the domain of everyday knowledge that EP coexists with actually is, I am not sure. Certainly, it is something I have only stumbled across in the process of researching popular evolutionary psychology. It will take a great deal more work, thought and empirical research directed at the issue to untangle things any further than this. However, this kind of knowledge about ourselves: about our emotions, relationships, cultures, bodies and societies, is being researched by many areas of the modern sciences. It is also knowledge that can be gained by many other means, very few of which are formally recognised as areas of expertise or even knowledge. This co-existences also means that knowledge about such areas are very often sites for struggles between so-called 'lay people' and 'experts' about whose knowledge is most valid or even 'right'.[22]

6.3.3 Implications for communication: the language of reflexive science

> So it's the mixture of the familiar and the new idea, and the other thing evolutionary psychology's got going for it, is it doesn't have to explain any of it's terms, it doesn't have jargon of its own. And that's where molecular biology's always had an uphill struggle, because you get halfway through the first paragraph of telling people what an intron is and what a gene is and what messenger RNA is, and then they've glazed over. (Respondent 16 - author and science writer: interview, 31/01/02)

This author was telling me why he found it so much easier to write popular science about evolutionary psychology than about genetics – that evolutionary psychology not only shares a subject with many forms of lay knowledge, but also because much of the time it shares a common language as well. This got me thinking about the ideas of

[22] It may be that this kind of knowledge about people, which can be gained and held by anyone, is what Harry Collins (1990; 1998) was talking about when he argued that there are some kinds of knowledge that can only be held by people and will never be held by computers.

'boundary objects' as used in social worlds theory and discussed at length in Chapter Two, section 2.3.3. Boundary objects are usually words or ideas, such as 'the state of California', which are coherent enough to be intelligible to diverse groups of people, yet are loosely defined enough to accommodate all the slightly different meanings in use by those different groups, thereby helping them communicate with each other. By this definition, a number of possible boundary objects spring to mind, which I will briefly highlight here.

One of the most striking things about the technical language of sociobiology and evolutionary psychology is that it often adopts lay terms, giving them slightly different meanings in the process. Unlike most natural sciences, which generally invent new words such as *quark*, or abstract them far away from their original meaning, sociobiology is full of terms like *selfish gene*, *altruism*, *sexual strategy* and the like. This means that when criticism is levelled at the subject, it can often be deflected with an argument that the term has been misunderstood or misinterpreted in some way. On the other hand, it could be argued that such terminology is part of the reason why these sciences can be so easily talked about on a popular level in the first place. This kind lay/technical crossover language can in fact be seen all over the social sciences, and may simply be a by-product of being a reflexive science. Other potential boundary objects in evolutionary psychology might include ideas of human nature ('what people are like'), including conceptions of gender politics, and also the terms 'gene' and 'genetic', the flexibility of which has been discussed by Nelkin and Lindee (1995), Shea (2001) and Keller (2000).

6.4 CONCLUSIONS

Quantitative findings presented in Chapter Four, that the media was handling evolutionary psychology in a different way to the more routine media treatment of 'science' were followed up in detail in this chapter. Drawing upon media coverage of EP, as well as interview comments, I explored what it was about the social worlds of the media that resulted in this differing treatment. The working practices of various social worlds within the media meant that generalist and features journalists as well as editors, had strong reasons to prefer writing about this particular area of science, while science and news journalists had equally strong reasons to avoid or ignore the subject. At the same time, evolutionary psychology stories were strongly congruent with overall media understandings of what make s a 'good story', otherwise known as news values. Thus further boosted the likelihood of evolutionary psychology being covered by all areas of the media in preference to other science and social science stories available at the time.

An important part of EP's congruence with news values came from the nature of its subject matter: people, their motivations, sex and human relationships. This subject matter also helped to explain why non-specialist journalists and editors felt more comfortable discussing evolutionary psychology than they would with other areas of the sciences. I showed how, in discussions of EP in the media, the boundaries of expertise were being drawn very differently than is usually seen in public discussions of 'science', with non-specialists taking on board and actively questioning knowledge claims made by evolutionary psychologists. As well as the more usual 'experts' of academics and specialist journalists, many other holders of expertise were invoked in these arguments, including grandmothers, novelists and social workers, while at the same time other forms of knowledge were also cited, such as common sense, humour and personal experience.

Chapter VII:

Evolutionary Psychology as Public Science and Boundary Work

7.1 INTRODUCTION

7.2 SOCIAL WORLDS, LEGITIMACY AND THE PUBLIC DOMAIN

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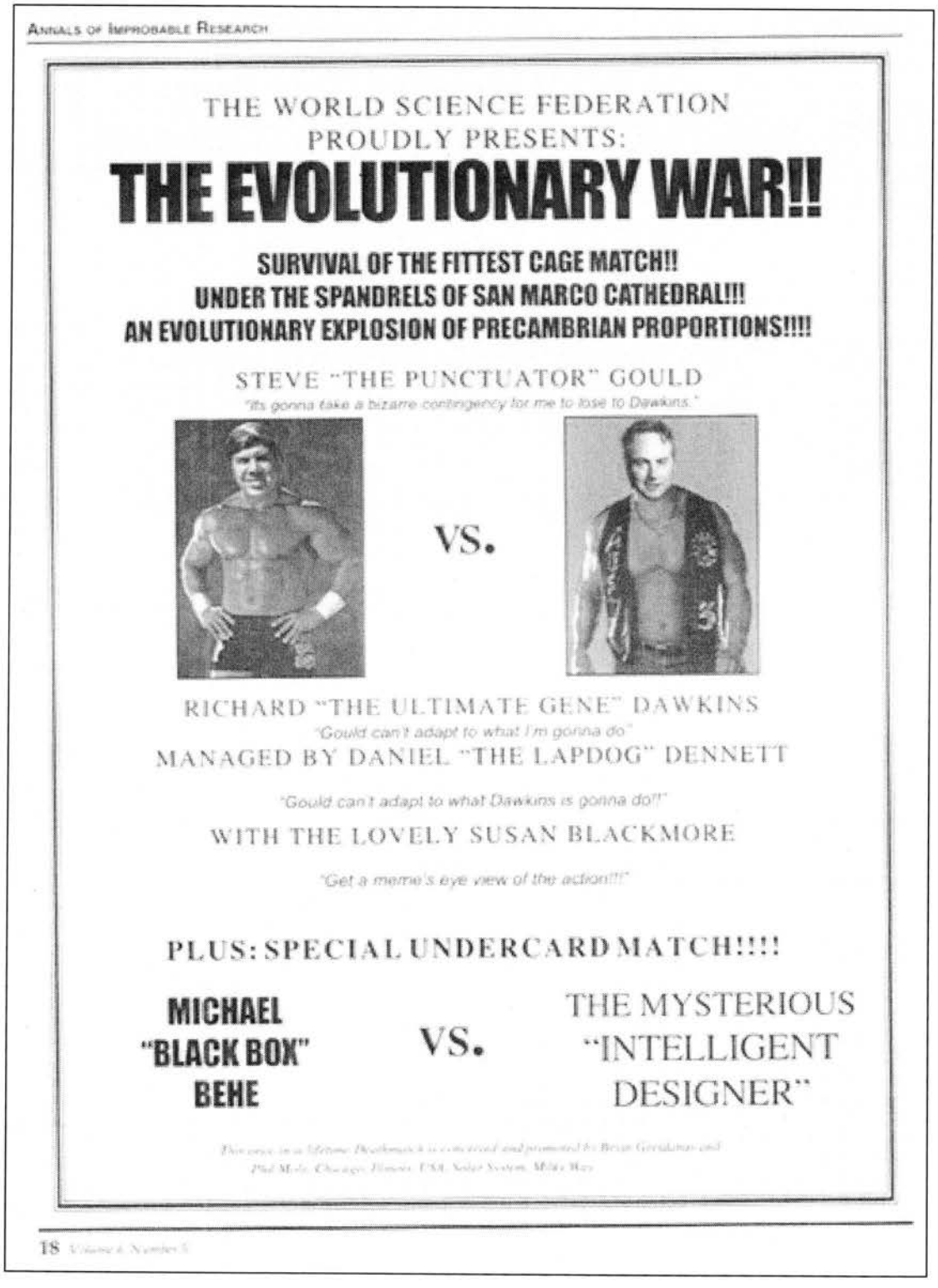
Chapter VII:

Evolutionary Psychology as Public Science and Boundary Work



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THE EVOLUTIONARY WAR!!

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AN EVOLUTIONARY EXPLOSION OF PRECAMBRIAN PROPORTIONS!!!!

STEVE "THE PUNCTUATOR" GOULD
"It's gonna take a bizarre contingency for me to lose to Dawkins."

VS.

RICHARD "THE ULTIMATE GENE" DAWKINS
"Gould can't adapt to what I'm gonna do"
MANAGED BY DANIEL "THE LAPDOG" DENNETT

"Gould can't adapt to what Dawkins is gonna do!!"

WITH THE LOVELY SUSAN BLACKMORE

"Get a meme's eye view of the action!!!"

PLUS: SPECIAL UNDERCARD MATCH!!!!

MICHAEL "BLACK BOX" BEHE VS. THE MYSTERIOUS "INTELLIGENT DESIGNER"

18

Source: Annals of Improbable Research, Vol. 6, Number 5 (September / October 2000)

> The atmosphere is electric. High above the packed arena, a man borne on a trapeze descends slowly. Spotlight beams dance over the excited faces of the crowd. As the trapeze touches down, a familiar figure steps onto the canvas and, above the din, the ringmaster screams into his microphone: "Lay-dees and gentle-mairn, the Ego… has landed."
> Draped in a skimpy dressing gown, the intellectual heavyweight, biologist and essayist Stephen Jay Gould begins to circle the ropes imperiously. His opponent, the linguist Steven Pinker, author of the recent 800 page brain-fest *How the Mind Works*, is already stripped down to his satin shorts.
> Unmoved by Gould's entrance, Pinker is going over some last-minute preparations with his legendary coach Richard "Dick" Dawkins. The fight promises to be a classic.'
> (Martin Brooks, 'May the best man win: Some evolutionary pugilists seem to be just too proud to give up', *New Scientist*, 11th April 1998)

7.1 INTRODUCTION

Such a colourful start to a chapter probably deserves an explanation, although sometimes it can help to start a discussion of a serious subject with something slightly less so! Both of these pieces were both taken from publications which are read by both science professionals and 'lay' readers with a particular interest in science. *New Scientist* is a very well known example of this kind of publication, which could also include *Scientific American* and arguably the international journals *Science* and *Nature* as well, whilst *Annals of Improbable Research (AIR)* is a US based science humour magazine with a prominent web presence.[1] The *AIR* cartoon refers to arguments between the palaeontologist Stephen Jay Gould and the evolutionary biologist Richard Dawkins, which were in fact ongoing since the Sociobiology period of the mid Seventies, and were fought out in their many popular books on evolution. The *New Scientist* article was about a similar, but more vehement series of exchanges between Gould and the evolutionary psychologist Steven Pinker, alongside several of his allies, which took place in the *New York Review of Books* in 1997 (Gould 1997a, 1997b; Dennett, 1997; Pinker, 1997).[2]

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[1] See http://www.improb.com/ for further details. *AIR* also has a long running engagement with Steven Pinker as the founder member of the 'Luxuriant Flowing Hair Club for Scientists' http://www.improb.com/projects/hair/hair-club-top.html.

[2] To be fair on both men, Pinker wrote a very eloquent obituary for Stephen Jay Gould in *Time* magazine after the latter's death in 2002 (Pinker, 2002).

What is interesting about these articles is that they illustrate the very public nature of the controversies that have occurred around evolutionary psychology, as well as responses to these events from the wider scientific community. In particular, the lampooning of such controversies as boxing matches or wrestling bouts expresses the ambivalent relationship that many scientists have with the public domain, and with those of their number who seek to be engaged in this space. On the one hand, scientists such as Dawkins, Gould and Pinker are admired and valued for their abilities: in discussing their subject so clearly and articulately, in their championing of scientific causes and in arguing their positions well enough to be enthusiastically cheered on by onlookers. On the other hand, these public arguments could make science look bad: they can be seen as 'squabbles', full of 'hollow rhetoric, pompous quotations and insults' (Brooks, 1998, p51). Like wrestling or boxing, the point is to knock the opponent out rather than learn anything: such activities can also be seen as over the top, tacky, commercial, macho, violent and ultimately pointless. Public controversy of this kind draws attention to the sciences, but it also violates many of the traditional boundaries drawn around 'science' as a cultural activity, which have helped it maintain autonomy and authority in society.

This chapter will explore the public nature of evolutionary psychology claims and of the controversies associated with them. This can to be looked at from several angles: to start with, why have these scientists and academics chosen to communicate their ideas in the public domain, as 'popular science'[3], in the arena of the mass media? By contrast, most other scientists *don't* do this on a day to day basis, but instead confine most of their communication to their peers, in the much less publicly accessible fora of scientific journals and conferences. Most science in the public domain tends to be presented as established, uncontroversial facts, and the work of putting it there is done by professional communicators: university public relations people, science writers and journalists. This highlights two ways in which popular evolutionary psychology is unusual: in that it involves many more scientists doing *their own* communications work in public, and that it makes visible the controversy and disagreement amongst scientists usually confined to the relatively closed world of academia.

[3] This term is often used to indicate a genre of specialist media discussion of science, as in 'popular science publishing'. However, I will be using it in a slightly broader sense, to indicate all discussions of science that occur in the public domain.

As I outlined in Chapter Two, a growing body of research has been exploring what happens in cases of 'public science' and public controversy over issues of science and technology.[4] Public science, as described by Turner (1980, 1993) comprises something more than discussions of science in the public domain: it involves attempts *by scientists*

> to persuade the public or influential sectors thereof that science both supports and nurtures broadly accepted social, political, moral, and religious goals and values, and that it is therefore worthy of receiving public attention, encouragement and financing. (Turner, 1993, p203)

In particular, many of these studies have pointed to strong links between scientists' activities in the public domain, the need for legitimacy and support for their activities, and the shaping of the boundaries drawn around and between the sciences, known as boundary work (Bucchi, 1998; Gieryn, 1983). Such activities can be aimed at supporting the wider institution of 'science' in the public domain, or at bolstering support for a particular approach or discipline within the sciences. In the first case, rhetoric will be directed at 'rival' institutions or activities such as religion, while in the second, scientists will aim their arguments at their scientific opponents, producing public scientific controversy. Because the latter is so disruptive to the public image of science as certain, reliable, knowledge, it will only occur under certain circumstances, particularly when scientists find that they cannot use normal communication routes in academia.

In this chapter, I will be discussing the literature on public science in further detail and outlining the evidence that popular debates over evolutionary psychology constituted another example of such public science. Drawing on the empirical findings presented in this thesis, I will establish that concerted efforts were made firstly to bring EP to public attention as a 'new science', and subsequently to dispute and destabilise it in the same arena of the UK media. I will then explore the many ways in which evolutionary psychology challenged, destabilised, subverted, constituted and reinforced boundaries established within and around the social worlds of the sciences. In this case, the boundaries under contest existed in a series of layers radiating out from the central 'core set' (Collins, 1985; Collins and Evans, 2002) of the evolutionary psychologists

[4] This is not to be confused with my usage of 'science in public' as a descriptive term for academic studies of popular science, science in the media and public understanding of science, as discussed in Chapter Two, section 2.2.

themselves. Each of these layers of boundaries will be demonstrated through examples of boundary work being performed in popular evolutionary psychology, taken from relevant media discussions and interview material.

Finally, I will address the important question of who the 'publics' for popular evolutionary psychology are or might be. The fact that this material appears in the 'mass media' – in popular books; newspapers and magazine articles; on the TV and radio, tells us that the audiences being addressed are 'popular' ones, rather than, say, the very restricted readerships of academic journals. In line with my adoption of a critical, interactionist stance on relations between sciences, media and publics, I cannot leave this wider 'public' as an undifferentiated mass. Although my research has made no attempt to directly find out who the publics or audiences for popular evolutionary psychology might actually be, the issue can be addressed in more indirect ways. As I discussed in Chapter Two, section 2.4.1, the question of the *projected* social worlds of evolutionary psychology audiences is perhaps a more useful one in the context of this research – in other words, what kinds of audiences were popular evolutionary psychology debates being aimed at? The particular media forms and organisations in which popular EP appeared can tell us something about this. Are these media elite forms or do they have more of a mass appeal and circulation? How much do they cost? What kind of circulation or exposure do they achieve? What products are advertised in them? Another way of addressing this issue was to ask whom the actors involved in creating popular evolutionary psychology thought their audiences were. The responses were, I think, quite illuminating, and much can be inferred from them about why these evolutionary psychology debates were occurring in the public domain.

7.2 SOCIAL WORLDS, LEGITIMACY AND THE PUBLIC DOMAIN

7.2.1 Public science and boundary work

As I discussed in Chapter Two, section 2.2.1, canonical accounts of science have tended to describe it as something set apart from the rest of society, a privileged source of objective, value free, apolitical, and therefore reliable knowledge about the world. Such assertions often rest upon descriptions of the power of 'the scientific method' and

upon rhetorical work creating a distance between science and related areas of social activity such as engineering, religion, the humanities or politics. Many attempts have been made to find a set of criteria that can always distinguish science from 'not science', and these attempts can be described collectively as 'the problem of demarcation'.

Working from this perspective, Thomas Gieryn (1983, 1995, 1999) discusses such attempts at solving the problem of demarcation, and concludes that they have been largely unsuccessful in describing any characteristics that can apply *only* to science *all* of the time. In line with more recent views of science as an activity as fully social as anything else that people do and as such, without any essential property that allows it to produce purely objective knowledge about the world, he proposes that there are in fact no strict boundaries to science. As a consequence of this, scientists must engage in 'boundary work' in order to continue to lay claim to the 'intellectual territory' of the work they do, rather than relinquish it to other domains. In other words, because there is no essential character to scientific knowledge, scientists must work to convince others that the work they do is legitimate, their knowledge claims are valid, that scientists should have jurisdiction over such knowledge claims, and that the support they are given by the rest of society is valid. The needs of society are constantly changing over time, and therefore the kinds of arguments used by scientists also change to fit these requirements. Gieryn shows through examples how these arguments change and at times contradict one another. For example, in the popular writings of the Victorian physicist John Tyndall, science's empirical, practical benefits for technological advance were emphasised when distinguishing it from religion, but its theoretical, abstract side was stressed when separating science from mechanics and engineering (Gieryn, 1986, p784-7). For the same reasons that the boundaries between science and non-science must be constructed and defended, boundary work is also carried out between disciplines within science. This can occur on many levels, from the growth of individual labs or new research programmes, right up to new disciplines, all of which must do boundary work aimed at other scientists and funding bodies in order to gain recognition, funding and support for their work.

This view of demarcation, and of the strategies that scientists use to lay claim to intellectual territory are entirely congruent with social worlds theorists' view of the

sciences described in Chapter Two, section 2.3.2. Social worlds theory studies and those of scientific boundary work often cross-reference one another, and in his first paper on the subject, Gieryn uses very similar language to describe the sciences:

> But science has not always had its niche, nor are the boundaries of its present niche permanent. The intellectual ecosystem has with time been carved up into 'separate' institutional and professional niches through continuing processes of boundary work designed to achieve an apparent differentiation of goals, methods, capabilities and substantive expertise. Gieryn (1983, p783)

In fact, as well as understanding the importance of 'boundary work' in creating or maintaining demarcations in the sciences, the social worlds perspective also recognises that such activities can only be effective if they can reinforce and reach across boundaries *at the same time.* In order for knowledge claims and demarcations to become stable and legitimate, they must be recognised by other actors outside of the social world concerned. This means that scientists must be able to communicate across boundaries in order to persuade others of the validity of their claims. Such communication enrols wider support for the boundary claim, and can also persuade other researchers in neighbouring areas to join in.

If the language used in this kind of cross-disciplinary communication is too generalised and accessible then the social world risks losing any claim it might have to 'specialness' and therefore cannot demarcate itself from other activities. However, if the language used stays in the technical, specialised form used in internal communication, no one outside the social world will understand it properly, and the boundary claim will again fail. Star and Griessemer (1989) describe this dilemma as a 'central tension' in all scientific work, between the diversity of the viewpoints of actors and social worlds in the sciences, and the necessity of communication between those views in order to create reliable knowledge. In a similar manner, the fora in which knowledge claims are carried out are equally important. Claims made in publicly accessible or visible places will reach more people than those made in smaller or specialist sites, but such a strategy also increases the risks of being ignored, or of losing credibility within those specialist areas. On the other hand, claims made in a specialist domain can be specifically tailored to fit that domain, utilising its writing norms and jargon to make much stronger or more reliable knowledge claims, but then will only reach a very restricted audience.

Gieryn (1983, 1985) also readily recognises the importance of these links between demarcation and boundary work, the usage of language and the size or breadth of the audiences addressed. He shows how many episodes of boundary work, especially those concerning the interests of 'science' as a whole, are most likely to be carried out in the less restricted forum of the public domain. However, it is in the work of the sociologist Massimiano Bucchi (1996, 1999) that these relationships have been most fully explored.[5] Bucchi builds upon Cloitre and Shinn's (1985) work on forms of popular science, in which they describe four main 'stages' of science communication ranging from the specialist form of articles in scientific journals through to popular forms seen in the mass media, with knowledge becoming more certainty as it travels through them. When one or more of these stages is skipped, for example when scientific findings are announced in a press conference before being published in a peer reviewed journal, this is described as a process of 'deviation'. He describes several case studies of such incidents, for example in the public controversy over cold fusion, where scientists have sought out the public domain in order to make or debate knowledge claims (1999, ch.3). Bucchi's discussions have concentrated on more dramatic examples of the phenomena, such as cold fusion, where scientific claims have literally been made in press conferences, eschewing conventional processes of scientific communication entirely. However, I would argue that what truly identifies 'deviation' in communication processes is an appearance of knowledge claims in a popular, public form before or simultaneously with signs of their generalised acceptance in academia (such as a wide and/or uncontested presence in research literature or textbooks).[6]

Bucchi compares such episodes with the more routine occurrence of the 'popularisation' of science, in which knowledge passes routinely through the stages of communication, increasing in certainty as it does so and largely being handled by gatekeepers such as science journalists on the way. He convincingly argues that one of they key conditions for deviation to occur is some form of contestation over the boundaries of science, and the presence of boundary work. This can take the form of

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[5] Bucchi's overall approach to science communication research, and specifically issues of model building, has already been discussed in Chapter Two, section 2.2.5.

[6] As discussed in Chapter Two, I find the use of the term 'deviation' to describe this process slightly problematic, but will stick with it for the sake of consistency. However, it should be understood that here it is <u>not</u> being used in a normative sense.

making demarcations between 'science' and 'non-science' (religion, politics, culture, etc.); interdisciplinary controversy with contests over intellectual territory; or the establishment of new theoretical traditions or disciplines. Importantly, the kinds of motivations for carrying out this kind of work can be very varied within this framework. Although it might seem initially that episodes of 'public science' (Turner, 1980) have been largely concerned with the construction and maintenance of the legitimacy of scientific knowledge (and by implication justifying the financial resources provided by the rest of society to do this work), the story is by no means this simple. Often there will be multiple and conflicting reasons why scientists may choose to make their arguments in the public domain. For example, a study by Phillips (1991) showed that articles published in the *New England Journal of Medicine* that are covered by newspapers in the US are subsequently twice as likely to be cited in the academic literature than those *NEJM* articles not mentioned in the press.

The public domain can also be utilised as a 'creative space' for scientists (Felt, 2000, p30), where they can operate outside of the usual constraints of academic discourse. Scientists can speculate more freely about their work and discuss controversial issues in ways that would not be published in academic journals without strong supporting evidence (Green, 1985). Popular forms also lend themselves to the discussion of interdisciplinary topics lacking a suitable academic forum for debate, allowing ideas to be communicated to colleagues in other fields that might not hear about them otherwise (Dolby, 1982). In addition, the cited motivations given by scientists for doing popular work, such as a desire to share knowledge with non-specialists, to provide democratic feedback, and to contribute ideas felt be of importance to public culture, should not be dismissed too quickly. Even though popular science can be seen to perform many helpful functions for the interests of science and scientists, these more 'altruistic' motivations should also be taken seriously as being important for individual popularisers of the sciences.

Having described here how I see ideas about public science, social worlds theory and boundary work fit together into a single framework, I will now apply these ideas to the case of popular evolutionary psychology debates. I will firstly go over and bring together the evidence that evolutionary psychology has undergone an unusual 'push'

into the public domain, of the sort seen in episodes of public science. This has involved not only evolutionary psychologists themselves, but also other academic and non-academic actors engaging in debate over evolutionary psychology claims, taking a variety of positions on the issues of concern.

7.2.2 Evolutionary psychology 'in public': a recap

In Chapter Four, I discussed in detail the picture of popular evolutionary psychology in the UK media over the 1990s, drawing on my experiences monitoring this coverage, interviews with actors in popular EP, and quantitative analysis of the media. In this section I will revisit some of these findings and will also introduce some further interview material in order to establish that this case provides an example of Bucchi's (1995) concept of 'deviation' in science communication. In other words, I will try and establish that at an early stage in the development of the subject, academics were turning to the public domain, rather than following the 'popularisation' trajectory of science communication, of knowledge entering the public domain after it has been widely established in academia.

The label of 'evolutionary psychology' first entered the public domain in the UK in 1994, with media coverage of a popular science book, *The Moral Animal* (1994), by US science writer Robert Wright. In this book, Wright introduced evolutionary psychology, its major ideas and discussed its implications for people's live and behaviour, especially in terms of heterosexual relationships and modern marriage. Wright presented evolutionary psychology as a 'new science': well-established and uncontested scientific knowledge, and certainly it is true that the first academic journals articles on the subject had occurred five years previously, in 1989 (Cosmides and Tooby, 1989a; 1989b). However, as I discussed in Chapter 4, section 4.3.1, it was not until after 1994, and certainly long after the book would have been written, that discussion of evolutionary psychology started to rise in the academic literature. Whether the sharp increases in citations in the late 1990s are indicative of widespread acceptance of EP in academia, or of widespread controversy is to an extent immaterial to my argument. The point is that EP is now being widely discussed in academic journal articles, whereas prior to the popular media debates of the mid-nineties, it was barely mentioned. Evolutionary

psychology could not have reached the status of established knowledge without having been widely discussed in the literature, indicating this is not a case of ordinary 'popularisation', but may be one of 'deviation' in science communication. Another important indication that this was happening came from the quantitative analysis of CD-ROM newspaper archives comparing evolutionary psychology coverage with that of a comparable 'science' topic. I found that many more academics and authors were writing articles about evolutionary psychology than about the science topic, as well as in a sample indicative of 'typical' press discussion.[7]

The production, publication and marketing of books about evolutionary psychology has been central to coverage of the subject in the other media. As I explained in Chapter Four, publishing and the other media have long established co-operative routines for this, in which publishers get publicity for new books while the other media have a valuable and reliable source of content for discussion. I established that there were close links between media coverage of EP and at least two popular evolutionary psychology books: *The Moral Animal*, and Steven Pinker's *How the Mind Works* (1998).[8] There were many other popular books on the subject published during the second half of the 1990s, some of which were by science writers like Robert Wright, but most of which were written by academics: either evolutionary psychologists like Pinker, or people from a wide variety of disciplines surrounding the subject. The contributions made by science writers were particularly interesting: like Wright's book, others by Matt Ridley (1993, 1996, 1999) and Natalie Angier (1999) argued their own positions within evolutionary psychology debates, rather than simply 'translating' the work of academics into lay language.[9] Unlike Ridley and Wright, who were closely aligned with EP, Angier's book, *Woman: An Intimate Geography* (1999) was a feminist celebration of women's biology, a chapter of which was a savage critique of evolutionary psychology claims about women. This widespread presence of 'popular science' books written by academics sets up a direct line of communication between author and reader unmediated by any other actors, which then afforded many opportunities for them to make contributions 'directly' in the other media. Examples of such activities would include the publishing of book serialisations and extracts in newspapers, appearances on

[7] See Chapter Four, section 4.5.2.
[8] Chapter Four, section 4.4.
[9] This kind of 'blurring' in the boundaries of expertise in the EP debate is explored in Chapter Seven.

the radio, interviews, and the writing of commentary pieces, letters to newspapers, and book reviews.

Another very important way in which academics could communicate directly in the public domain was through the medium of public lectures and debates. The Darwin@LSE programme provided the evolutionary psychologists, if not their opponents with a particularly high profile forum for these activities.[10] The programme co-operated closely with several publishers, in particular by timing the seminars to coincide with book publications and other media appearances, but also more directly, as described by this member of the group:

> I think there was a very slick press operation as well, we were basically putting out very good press reports and things, and I think in terms of its hit rate, in getting press coverage I haven't seen anything like it [...] It became a sort of self-fuelling thing, because the more people came along to the talks and the more press coverage it got, the more people wanted to be involved in it, or wanted to get information about it. [...] We'd produce information, posters and stuff, press releases, and people who wanted to get information about it would just send their names in and we'd put them on the database, and then every few months there would be a mailing that would go out to everyone on the database, saying whatever it was. And other people would inevitably read those flyers, and they would say, "oh put my name on the database" [...] and the cost of sending out those flyers would generally be covered by putting in flyers for books and things from publishers.
> (Respondent 6 - academic author, evolutionary psychology, Darwin@LSE member: interview, 01/08/01)

Darwin@LSE also co-ordinated closely with the rest of the media, actively sending out material to journalists and other interested people on a regular basis. Many of the media actors I interviewed spoke of receiving material from Darwin@LSE: this is a typical response when I asked what they knew about the programme:

> In the sense that I'm informed of it any time anything happens, and Helena Cronin rings up and badgers me from time to time, and certainly is a wonderful leg biter, that is whenever she sees the press she bites their legs, and says, "why don't you come to my bloody lecture-ettes".
> (Respondent 17 - science journalist, broadsheet press: interview, 02/09/01)

It was in 1998, the year that Darwin@LSE's public lecture series closed that media coverage of evolutionary psychology really started to take off. However, it was very clear from my interviewees that it was their intervention that provided a crucial 'push'

[10] Described in detail in Chapter Four, section 4.2.3.

into the public domain making this visibility possible. It was also at this later stage that the media coverage started to take on a new and equally unusual feature: that of a debate, in which the 'facts' of EP were treated less and less as certain scientific knowledge, and became increasingly contested by a range of actors. In the content analysis, it was found that over the 1990s, media coverage became more sceptical and oppositional to the claims of evolutionary psychology. Articles on the subject also got longer, implying more in-depth discussion of the issues.[11] Part of this trend could simply be put down to the media need for novelty in stories, and a good way of creating a 'new angle' on evolutionary psychology would be to express scepticism about it. However, it was during this later period that various academics espousing alternative positions to evolutionary psychology emerged into the public arena of the UK media.

Although scientists such as Stephen Jay Gould had been active in arguing against strong Darwinian positions in both public and academic domains for many years, opposition re-emerged in the 1990s UK largely as a reaction to the strong public visibility of evolutionary psychologists and the Darwin@LSE programme. The most visible figures were Hilary and Steven Rose, a sociologist-neurobiologist team who had also been very active in the Sociobiology controversies of the 1970s and '80s. Working separately and in concert, they made themselves visible in the media through writing articles, book reviews, public lectures and debates and appearances in other media to argue against evolutionary psychology positions. This culminated in the publication of a book, *Alas Poor Darwin: Argument Against Evolutionary Psychology* (2000), in which academics from a range of disciplines wrote essays on various aspects of the subject. Like its predecessors in EP, the book was published as a 'trade', or popular book, and was covered by the press and other media as such.

Despite an initial appearance to the contrary, the Roses were not the only people intervening in this way. Towards the end of the 1990s, many academics and others contributed similar, if less high profile public responses to evolutionary psychology, also largely based around popular or semi-popular books. Unlike the Roses' position, which was actively oppositional to EP, these displayed a wide range of responses, from the allied but slightly distanced to the critical to the strongly polemically opposed, and came

[11] Chapter Four, section 4.5.3.

from an equally wide range of disciplinary backgrounds. Examples of these included geneticist Steve Jones (1996, 1999); ethologists (animal behaviour) Patrick Bateson (1999) and Tim Birkhead (2000); sociobiologist Sarah Hrdy (1999); developmental psychologist Annette Karmiloff-Smith (2001); feminist psychologist Lynne Segal (1999) and the American science writer Natalie Angier (1999).[12] Many of these responses involved popular books on related subjects, such as genetics, evolution or development, which included some kind of contribution or reference to the debates over evolutionary psychology. Such contributions were subsequently highlighted by the author, publishers and journalists in media coverage about the book, creating a series of media events generally framed as 'controversy about evolutionary psychology'. Just as Darwin@LSE had provided a focusing point for pro-Darwinian argument and opinion, these interventions provided a focus and a resource for actors engaging with and challenging the claims made by evolutionary psychologists.

The appearance of more books and other 'direct' forms of communication in the mass media was not unique to this area, but was instead part of the 1990s boom in 'popular science' discussed in Chapter Four, section 4.2.2. This helped to provide a forum for debate over evolutionary psychology, as remarked upon here by one of the popular authors I spoke to.

> There's also this very interesting phenomenon, the way in which scientific debates are being fought out in terms of books at the moment, and the publishers like it because these books sell, we don't know how long this will last but it's an interesting phenomenon. In a way, the ideas are being fought out against, in a much broader and different arena than papers published in scientific journals, and that's very important therefore.
> (Respondent 18 - academic author, neurobiology: interview, 21/01/02)

This is also part of wider changes in relationships between the sciences and the rest of society over the same time period. Many of these have directly affected the practices of popular science and have resulted in some shifts in the boundaries traditionally drawn between the two areas. I will explore these at greater length later in this chapter.

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[12] Where these refer to books, it is to the UK hardback publication. Earlier US publications, plus paperback editions (usually published the following year) mean that media coverage of books tends to be spread out over a long period around the main publication date.

In this section, I have reviewed previous research looking at instances of public science, and have explored the links between such instances, the sciences' need for legitimacy in the public domain, and the maintenance of demarcations around and within the sciences, known as boundary work. I have then reviewed some of my empirical findings about popular evolutionary psychology in the UK of the 1990s to show how it has many features in common with previous instances of public science. This included evidence that academic citations for evolutionary psychology only rose after popular discussion in the media, and that an unusual number of academics and authors were writing about the subject, as compared to a closely related science topic. There were also indications of close links between coverage of evolutionary psychology and the publications of popular books on the subject, which was helped by the activities of the Darwin@LSE programme. Finally, there was also evidence of the development of a public debate over evolutionary psychology claims, with books being published with a range of positions on the subject, and articles becoming longer and more critical over the 1990s. Having established that there was some kind of 'push' to the public domain taking place here, I will now address some of the possible reasons for this push, by examining some of the layers of demarcation and boundary work taking place around evolutionary psychology.

7.3 THE DISCIPLINARY ECOLOGY OF EVOLUTIONARY PSYCHOLOGY

7.3.1 Evolutionary psychology: the 'core-set'

> What it [evolutionary psychology] is actually, it is the attempt to put forward evolved adaptations in the human mind [...] I think in pop terms, I mean my own rough... like any catchphrase like that, it's also an aspiration, it's a research programme, it's a, you know, it's practically got a tool for picking things out of horses hooves!
> (Respondent 1 - author and freelance science journalist: interview, 30/07/02)

Asking actors to give some kind of definition of what they thought evolutionary psychology was turned out to be a simple and quite revealing way of starting my interviews - a good way of engaging people whilst breaking the ice in a new encounter. The answers I got back were enormously varied, as are the descriptions and definitions of evolutionary psychology that have appeared in print. The ways in which the actors

positioned and described evolutionary psychology with respect to the pre-existing 'disciplinary ecology'[13] can tell us a great deal about the state of play between these various disciplines. They can also give a context to the movement of EP actors into the public domain documented in the previous section, and perhaps throw some light on their motivations for doing so.

Before starting to go into the different kinds of answers I got to the question, 'what is evolutionary psychology?', it may be helpful to give my own account of who I see the core 'evolutionary psychologists' to be, and what their central ideas have been.[14] A helpful concept for this exercise is the idea of the 'core-set' (Collins, 1985; Collins and Evans, 2002): the central, often very small group of scientists directly involved in experimentation and theorisation about a particular scientific issue. In this case, the first people to write about 'evolutionary psychology', and the originators of the central concepts identified with it were a group of North American psychologists and anthropologists, who originated the label in the late 1980s. This core group included two partnered research teams: psychologist Leda Cosmides and anthropologist John Tooby and Canadian psychologists Martin Daly and Margo Wilson, plus psychologist David Buss, cognitive psychologist and linguist Steven Pinker, and anthropologist Donald Symons, who had been involved with Sociobiology since the late 1970s (see Symons, 1979). The most important academic society for evolutionary psychology is the Human Behaviour and Evolution Society (HBES for short): its journal *Evolution and Human Behaviour* would be one of the central academic sites for publication on the subject.[15]

In the wake of this group, many other academics have adopted their ideas, and are based in a wider range of disciplines: still psychology and anthropology, but also linguistics, economics, philosophy, law, management and advertising. This second group is also more widely geographically distributed with a strong presence in the UK as

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[13] Following Gieryn's 'intellectual ecology' (1983, p783).
[14] Of course this account will be every bit as partial as that given by my interviewees, but is based upon my close study of the popular and academic presentations of the subject, as well as asking my interviews what they knew of the origins of the subject.
[15] See http://www.hbes.com/ and http://www.science.mcmaster.ca/psychology/ehb/ehb.htm for further details of these. *Evolution and Human Behaviour* changed its name from *Ethology and Sociobiology* in 1996.

well as US, although with far fewer (if any) representatives outside of the Anglo-American world. Examples of UK core-set actors include members of the original Darwin@LSE group such as Helena Cronin, Oliver Curry and Dylan Evans. In this case, I would argue that this core-set has also included science writers such as Robert Wright and Matt Ridley, who have been very active in contributing to and promoting evolutionary psychology through their books and writing in the mass media.

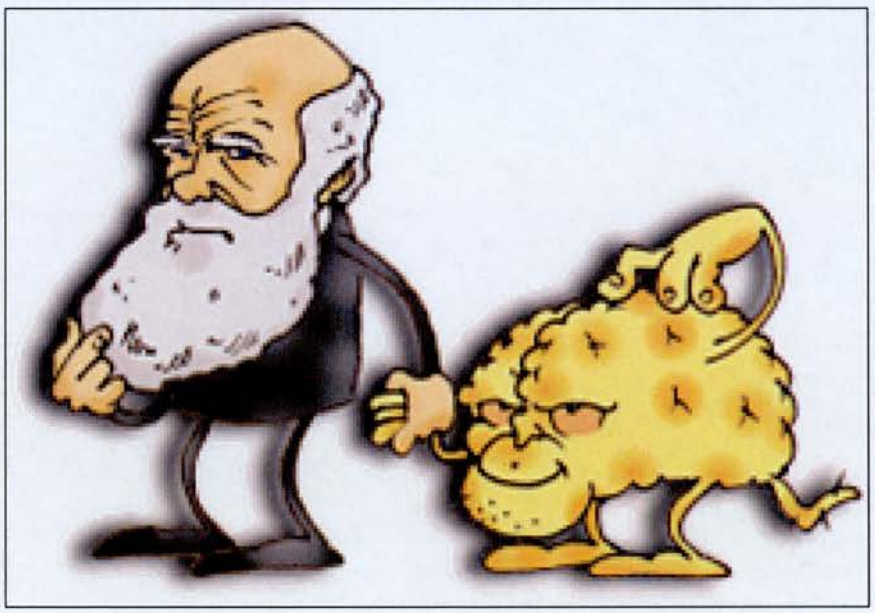

Image by Enrico Biondi, taken from: 'Evolutionary Psychology' (Buller, 1998) on the website A Field Guide to the Philosophy of Mind http://host.uniroma3.it/progetti/kant/field/ep.htm

This image was taken from an online resource of essays about the philosophy of mind, which provides one of these cartoons as a way of highlighting the central concepts of the essay. In this case, the cartoonist has seized upon one of the most central concepts and definitions given by the proponents of evolutionary psychology. This, as suggested by the name itself, is that EP is 'the combination of two sciences – evolutionary biology and cognitive psychology' (Evans and Zarante, 1999, p 3), or as indicated above in this cartoon what happens when Darwin and the brain get together. Interestingly, in this image, both parties seem to be slightly confused about the alliance.

> Evolutionary psychology is an *approach* to psychology, in which knowledge and principles from evolutionary biology are put to use in research on the structure of the

> human mind. It is not an area of study, like vision, reasoning, or social behaviour. It is a way of thinking about psychology that can be applied to any topic within it.
> (Leda Cosmides and John Tooby, 1997, p1, *Evolutionary Psychology: A Primer*)

This statement, taken from what one of my interviewees described as a 'manifesto' for evolutionary psychology, was written by American psychologists Leda Cosmides and anthropologist John Tooby, arguably the founders of EP and authors of the first academic papers to use the phrase. Although Robert Wright described EP in his book *The Moral Animal* (1994) as a 'new science', Cosmides and Tooby avoid such a concrete definition, and resist characterisations of EP as a discrete discipline. In other places, they and others have referred to it as a 'new paradigm', either for psychology or the social sciences more widely (e.g. Barkow, Cosmides and Tooby, 1992; Buss, 1995). Cognitive psychology has traditionally been an area of psychology strongly aligned to the natural sciences, often using models of the mind based on computing metaphors and allied with neuroscience, computer science and artificial intelligence. The addition of Darwinism brings evolutionary psychologists further towards the natural sciences, thus lending them the relatively greater epistemological authority of biology. The role of EP in the social / natural science boundary will be explored in greater detail later in this chapter.

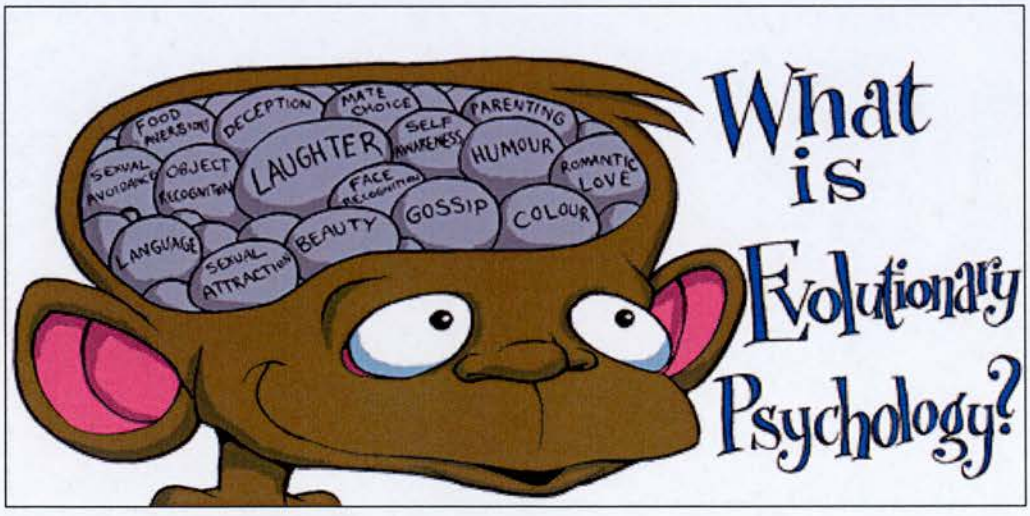

Image by Alex Hughes, taken from: 'What is Evolutionary Psychology?' on the website Evolution's Voyage by William A. Spriggs. http://www.evoyage.com/Whatis.html

This second image comes from the 'popular' website *Evolution's Voyage*, discussed in Chapter Four, section 4.2.1, and illustrates some other 'defining' characteristics of

evolutionary psychology ideas. Again, the image of the exposed brain is important as a symbol of the object of study of cognitive psychology. The many circles labelled 'laughter', 'language', 'sexual attraction' and so on indicate a specific model of the mind held by evolutionary psychologists: massive modularity. The massive modularity thesis sees the mind as made up of many independent units, each of which handles a specific task, e.g. language (Barkow, Cosmides and Tooby, 1992). This model was developed out of earlier ideas about modularity developed in cognitive psychology, but is still considered to be controversial within the discipline (Fodor, 2000). The representation of these modules is interesting, with the grey colour and three dimensional shapes recalling the exposed physical brain, but the labelled circles on the brain's surface also recalls the 19th century study of phrenology, which the evolutionary psychologists often claim as a precursor to their own science (e.g. Evans & Zarante, 1999, p 37).[16]

Image from: Helena Cronin, 'Discovering Human Nature' on the website Fathom: the source for online learning. http://www.fathom.com/

The image also looks to be one of a monkey, thereby symbolising human origins and links with other animals, as well as evolutionary psychology's connections with biology. Another important concept is the idea that 'Our modern skulls house a Stone Age mind' (Cosmides and Tooby, 1997) – that our minds are adapted for an ancestral environment and haven't changed since (though the environment has), often paraphrased as 'caveman psychology'. Finally, evolutionary psychologists stress that their interest in the 'universal' features of human behaviour, rather than in any differences between groups of people.

[16] Interestingly, phrenology itself had enormous popular appeal and was also the subject of huge controversy in the public domain, as well as heavy boundary work (see Cooter, 1984; also Shapin, 1979).

7.3.2 'Broad' and 'narrow' evolutionary psychology

This is evolutionary psychology as laid out by its proponents in academia. However, these definitions were and are far from uncontested by other actors in academia. Moving out from the core-set of the evolutionary psychologists, there is a far broader grouping of academics who use evolutionary theory in their work and are interested in, or directly study, human beings. This would include theoretical evolutionary biologists, anthropologists, behavioral geneticists, paleoanthropologists, and people who study animal behaviour, including primatologists. This is where the situation becomes very much more complex, as these disciplines have been around for much longer than EP, involve a huge diversity of theoretical models and empirical methodologies, and are also the origin of many of the theoretical concepts currently in use by evolutionary psychologists. By and large (and it is important to remember that these are broad characterisations rather than exclusive classifications), this broader grouping of practitioners hold in common an orientation, location or history leaning towards the natural (particularly biological) sciences, and towards the theoretical approaches of sociobiology and behavioural ecology.

The term 'sociobiology' was first coined by the American entomologist E.O. Wilson in 1975 in his book *Sociobiology: The New Synthesis* (Wilson, 1975) and described his vision of how to apply the concepts of evolutionary biology to the study of behaviour. As the title suggests, the book brought together a huge amount of empirical research in animal behaviour whilst showing how those findings were consistent with developments in evolutionary biology at the time. It was his final chapter, in which Wilson attempted to extend these arguments to humans, that caused a huge amount of controversy. This controversy, which extended through the late 1970s and into the 1980s, shared a number of features with the evolutionary psychology debates documented here. It was launched and sustained through a number of semi-popular books and 'public' events; involved protracted, bitter and very public controversy between academics from a range of disciplines; and was concerned with contemporary political issues, as well as the boundary between the natural and social sciences. A full discussion of the Sociobiology

controversy is far beyond the remit of this research.[17] However, it is important for understanding the current situation to take this previous episode into account, as well as to realise that sociobiology did not begin, end or exclusively comprise the writings of E. O. Wilson.

In parallel and prior to the American work of Wilson and his colleagues, the British tradition of ethology (animal behaviour) research had developed alongside more theoretical evolutionary biology work to create something very like Wilson's Sociobiology. In 1976, the then ethologist Richard Dawkins published the classic work of popular science *The Selfish Gene*, describing how evolution could be much better understood if seen from the point of view of individual genes, rather than organisms, populations or species (all of which were in use at the time). The traditions represented by Wilson and Dawkins were interrelated from the start and rapidly moved together to strongly influence many areas of biology, but particularly 'whole organism' disciplines, such as population biology and studies of animal behaviour. This means that although the public disputes over Sociobiology and humans are in the past, there are today many scientists who would happily call themselves sociobiologists. In her research on primatology, Amanda Rees (2001a; 2001b) argues that sociobiology was taken up by primatologists in the 1970s and 1980s because it provided a strong theoretical framework for a field of study that had previously worked largely within an empirical, descriptive 'natural history' framework. This theoretical framework helped to bring primatology further towards the natural sciences and reinforced its status as 'science', rather than the atheoretical, semi-amateur Victorian tradition of natural history. This holds for not only primatology, but also studies of other animals, as described here by one of Rees' informants:

> Sociobiology, or what can be spoken of, "more broadly under the label of behavioural ecology, what it boils down to is asking not just the old question of what do the animals do but in addition, asking the question, 'If they are well adapted, what should they be doing and how close does the one match the other?' This is the kind of thinking that has really revolutionised animal behaviour in general, not just primate field studies." (Rees, 2001a, p233)

[17] For in depth treatments of this period, see Brown (1999) and Segerstrale (2000). I outlined a brief 'timeline' of studies of evolution and humans in the second half of the 20th century in the Introduction, section 1.1.2.

This quote also illustrates the ambiguity felt by practitioners around the usage of the label 'sociobiology', with 'behavioural ecology' sometimes being adopted as an alternative name for the area. This is particularly common amongst UK academics, where the behavioural ecology tradition was developed from ethology, in the wake of Dawkins' and others' work. I explored this distinction with my interviewees and found it to be highly ambiguous. People identifying closely with evolutionary psychology seemed aware of the term, but were very unclear on what it might mean. Some researchers felt the two were synonymous, or that it was pointless trying to make such distinctions, whilst others (tending towards the ethology tradition) seemed much keener to make a strong distinction between the two. At the same time, there were others who quite pragmatically identified the 'behavioural ecology' label as a tactic used to avoid the political connotations of sociobiology, or to distance a British research tradition from a North American one. It is notable that during my undergraduate degree I studied separate courses in sociobiology and behavioural ecology, taught by academics in different research groups. The 'sociobiology' course emphasised Wilson-style observational animal behaviour research and general theoretical principles, whilst the 'behavioural ecology' course had a stronger stress on experimental studies, ecological concepts and mathematical modelling.

These disciplinary structures were reflected in the range of interview responses I got to the direct question 'What is evolutionary psychology?' As discussed earlier, the original proponents of EP, right from the start, were making very strong rhetorical claims about evolutionary psychology's newness and difference from anything that had gone before, as well as its 'scientificness' through the use of evolutionary theory. This was reflected in the responses from the core evolutionary psychology people I spoke to:

> [EP is] any attempt to study the mind from an evolutionary point of view, but I think that's probably too broad [...] To designate the modern movement, I think it had sprung up in the late '80s as a specifically cognitive psychology reaction to the more behaviourist emphasis of sociobiology.
> (Respondent 6 - academic author, evolutionary psychology, Darwin@LSE member: interview, 01/08/01)

> It's just Darwinian theory applied to human beings, that's all, just as simple as that. I think the one thing I would add, is that there are so many wrong ways of applying it in general to any species, and to any problem, but in particular people seem to find even more wrong ways of doing it when you get to humans. But this, the key that

> this approach has developed and is obviously right, is not to try to explain human *behaviour* as the adaptations, but to look at the adaptations in the mental and physical adaptations that natural selection has laid down, and then those generate forms of behaviour, and different behaviour under different conditions, and one of the problems is to look at, given this mental inheritance and psychological inheritance, under what sorts of conditions might you expect what to occur. It's just being Darwinian, at humans.
> (Respondent 3 - academic author, evolutionary psychology, Darwin@LSE member: interview, 23/01/02)

These responses also stressed the importance of *psychology* rather than *behaviour*, which emphases the contributions of cognitive psychology to EP, and distances it from sociobiology, which has always talked in terms of animal and human behaviour. Part of the reason for this distancing can be seen in the views and rhetoric of longstanding opponents of EP and sociobiology, who tend to describe it as part of a larger continuum of approaches to studying humans.

> Evolutionary psychology is a new [...] the latest manifestation of what appeared as Sociobiology in the 1970s.
> (Respondent 20 - academic author, feminist, sociology, psychology: interview, 01/08/01)

> Look, I mean I date the whole recent, sort of the whole history of the current interest in sociobiology, evolutionary psychology right back through the 1970s. Really I would date its starting point to when Jensen wrote his paper on IQ, back in 1969.
> (Respondent 18 - academic author, neurobiology: interview, 13/07/99)

This view of EP, as continuous with previous 'biological' (and politically conservative) approaches to humans, serves obvious rhetorical purposes, which will be explored later in this chapter.[18]

This boundary between sociobiology and evolutionary psychology was also regarded as rather a weak or unimportant one by many actors in the wider arena of evolutionary studies, as seen in this exchange with Richard Dawkins, published in *the evolutionist*, Darwin@LSE's online magazine:[19]

> the evolutionist: Surely there's quite a difference between the way evolutionary theory is used in evolutionary psychology, than the kind used in the less sophisticated areas of sociobiology?

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[18] Other examples of this view can be seen throughout the Roses' *Alas Poor Darwin* (2000), and also in Dusek's, (1999) 'Sociobiology Sanitised...' paper.
[19] See http://www.lse.ac.uk/Depts/cpnss/darwin/evo/. The use of lowercase lettering was on purpose, and as with the label Darwin@LSE, emphasised a 'trendiness' and modernism, associated particularly with the dot.com explosion happening at the time.

> Dawkins: So you say; it's not obvious to me. Sounds like a new name for the same subject. What do you think is the difference?
> the evolutionist: The main difference is surely the emphasis on psychology…

Dawkins' view reflects one held by many of the people I spoke to, particularly the older ones: that EP is the same as sociobiology. Others were reflexive about the issue, questioning the need need for or utility of 'marching under banners', or using 'cheap slogans'. Others discussed the ways in which the label of 'evolutionary psychology' was being defined in ways they were unhappy with:

> I was an evolutionary psychologist before the word had been invented […] And I think I didn't notice what was happening, that in other people's minds evolutionary psychology had come to mean a much narrower branch of science, that not only was about the issues of evolution and psychology, but a particular theoretical framework […] So I've been in a bit of a dilemma, I don't want to abandon the term evolutionary psychology […] But it's become a bit of an albatross, because it now identifies you with a particular church within this field, many of whose ideas I don't actually hold with.
> (Respondent 10 - academic author, sociobiology, Darwin@LSE member: interview, 01/10/01)

Often this discussion would be conducted in terms of there being 'broad' and 'narrow' versions of evolutionary psychology, with several actors, expressing the hope or belief that the publicly visible label could be co-opted by a broader movement of varied theoretical approaches to evolution and humans.[20]

> I suppose you could have a broad and a narrow definition, a broad definition is that it's an attempt to have a naturalistic view of what it is to be human. A narrow definition would of course say that it starts from the viewpoint that the human mind, just like the human brain, the human body, is an evolved phenomenon, it can be understood, fully, as an evolved phenomenon...
> (Respondent 12 - author, freelance science journalist: interview 02/10/01)

This was often combined with comments that perhaps a better way of understanding the differences between sociobiology and evolutionary psychology would be to assign 'sociobiology' to the evolutionary study of animal behaviour, and 'evolutionary psychology' to that of humans.

In spite of, or perhaps because of, all the distinctions made by academics, media professionals expressed quite different attitudes to this issue of labels.

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[20] Interestingly, several textbooks recently published on 'evolutionary psychology' have actually stressed precisely this theme of a 'broad church' coming together under the label, see, e.g. Barrett, Dunbar and Lycett (2001).

> I don't think the majority, certainly the majority of the mainstream media really have the sophistication to distinguish between evolutionary psychology, social Darwinism, social biology, ordinary, in inverted commas, psychology. I think all these things tend to be sort of bundled up together, when I do pieces or with the World Service do pieces, which touch evolutionary psychology, we do make the distinction [...] but that distinction is not always clear, or is sometimes difficult to make
> (Respondent 14 - radio producer, science broadcaster: interview, 15/07/99)

Although most seemed aware of the stated differences between sociobiology and evolutionary psychology, they felt that such boundary attempts were generally unimportant for their work.

> As far as I'm concerned they just run together. [...] It's quite clear that evolutionary psychology is one of those umbrella terms, it means what you want it to mean and if it's a term that means what you want it to mean, why are you here?
> (Respondent 17 - science journalist, broadsheet press: interview, 02/09/01)

If these distinctions are not made in the public domain, then why is it important for an analysis of popular evolutionary psychology to understand them? The label of 'evolutionary psychology' has quite clearly become a publicly recognised term, and as the quantitative findings showed, one that has now eclipsed 'sociobiology', if not entirely replacing it.[21] Therefore, the ability to own this label, to be closely identified with it in the public domain as well as academia, is a powerful one, and is a position which the actors of popular evolutionary psychology have vied to be in. Having described the core set of evolutionary psychology, as well as the immediate disciplinary ecology surrounding it, including the boundary work which has been carried out around the label of 'evolutionary psychology', I will now continue to move out from my start point. I will now address some wider divisions in the sciences that the subject of evolutionary psychology encompasses, and the way in which the actors in this area have negotiated these boundaries.

7.3.3 Natural and social sciences

As I described in the previous section, the core-set of evolutionary psychologists are, in general, located in social science disciplines such as psychology and anthropology, or in subjects such as philosophy. In contrast to this, the majority of academics with an

[21] See Chapter Four, section 4.3.2.

interest in evolution and humans, including the previous generation of sociobiologists and behavioural ecologists, were and are located in, or have a strong orientation towards the natural sciences, particularly studies of animal behaviour. This means that social scientists using evolutionary ideas are still largely in a minority, with most 'mainstream' theoretical approaches in psychology, anthropology, economics and sociology not actively utilising evolutionary or biological ideas.[22] In addition to this, much of the most vehement opposition to using evolutionary approaches with humans has come from within the social and human sciences. For example, sociological concepts like the social construction of gender stress the roles of upbringing, social norms and cultural experiences in understanding why people act in the ways that they do. Another important area of difference would be the current emphasis in social anthropology, sociology and history on the importance of differences and variations across cultures and historical periods, as opposed to EP's interest in 'human universals'. This opposition seems to induce something of a siege mentality amongst evolutionary psychologists and their allies. A favourite quote, used several times in the interviews, and frequently on the EP mailing list, comes from Max Planck:

> a new scientific truth does not triumph by convincing its opponents and making them see the light, but rather because its opponents eventually die, and a new generation grows up that is familiar with it. (Planck, 1950)

This quote is generally used by evolutionary psychologists to imply that it is often not worth trying to convince their current opponents in the social sciences, but that in the end their 'scientific truth' will out.

Because of this, evolutionary psychology exists in a marginalised space in academia, outside of mainstream practice in the social sciences, but also with an ambiguous relationship with the natural science disciplines of evolutionary biology, zoology and ethology, as I described in the previous section. EP's attempt to marry the two areas has been done in a very particular way, which has proved to be a significant source of controversy. During the 1970s, E. O. Wilson argued that sociobiology provided the means for a 'scientific' study of human behaviour, in which the social sciences would

[22] This is not to say that the EP characterisation of the 'Standard Social Science Model', discussed below, as ignoring the role of biology is by any means a fair one: just that most social scientists don't actively use evolution in their work.

ultimately be subsumed by the natural sciences (in the form of biology).[23] In line with, and in response to such ambitions, Hilary Rose asks whether EP is 'colonising the social sciences?'(Rose, 2000), and concludes that this is indeed the case. However, as I have described above, sociobiology was and is practised most strongly in the natural sciences, whilst one of the things that is definitely new about evolutionary psychology is its presence and origins in the social sciences. In *The Adapted Mind* (1992), an edited book which laid out the basic premises of evolutionary psychology, EP is described as a 'new paradigm' for the social sciences. This also suggests something a bit different from Wilson's decidedly colonialist ambitions. Rather than subsuming the social sciences into biology, the intent seems to be to maintain the social sciences as separate disciplines for studying humans, but to instead transform *how* this is done. Hence the mobilisation of Kuhn's (1962) imagery of 'scientific revolutions' and 'paradigms', which fits well with the oft-used quote from Max Planck cited on the previous page (also implying that evolutionary psychology can transform the social sciences from within).

In the first chapter of *The Adapted Mind,* Tooby and Cosmides (1992) launched an attack on what they described as the 'Standard Social Science Model' (SSSM) of how humans work. They characterised this model as one which ignores the role of biology and evolution in the human mind, behaviour and culture, thereby cutting off the social sciences from the natural sciences. Hilary Rose argues that this characterisation is a 'straw enemy', set up by evolutionary psychologists to strengthen their own position (2000, p118). What does emerge from the evolutionary psychology critique is a concerted attack upon *interpretive approaches* to social science, especially as practised in much of anthropology and sociology. Positivist approaches, utilised more frequently in psychology, (especially cognitive psychology) and physical anthropology, are held up as better, more 'scientific' alternatives. Conflicts between interpretive and positivist philosophies of social science have continued through most of the 20th century and are far more complex than can be given justice here, though they have also been discussed in the methodology chapter (chapter 3). To give a quick characterisation, positivist approaches attempt to study humans in the same way as the rest of the natural world, using (largely) quantitative data and experimental methodologies, whilst interpretive

[23] Wilson has built upon and elaborated these ideas in his more recent work, *Consilience: the unity of knowledge* (Wilson, 1998).

approaches stress the importance of meaning in human thought and action. This means that humans must be studied in different ways to the natural world, with a greater emphasis on qualitative data (such as is in use here) and different methodologies such as interviewing, analysis of discourse and ethnography.[24]

This conflict can be seen most sharply in the splits within the discipline of anthropology, where physical anthropologists measure people and cultures quantitatively, or take naturalistic approaches through studying primates or human evolution. In stark contrast, most social anthropologists reject these approaches and methodologies and instead investigate the particularities of contemporary human cultures, using participant-observation techniques and ethnography. This split is perhaps one of the most severe in the social sciences, with members of each group rarely communicating with the other and controversy between the two increasingly acrimonious.[25] Interestingly, it is anthropologists such as John Tooby and Donald Symons, who provide the most direct links between the (mostly) older sociobiology and (mostly) younger evolutionary psychology research communities. Another example would be in philosophy, particularly the philosophy of science, where newer, STS perspectives on the sciences are still strongly contested by positivist philosophies of science, but also actors in the philosophy of mind (which is closely aligned to cognitive psychology). Several of the proponents of EP, such as Helena Cronin, Daniel Dennet, Janet Radcliffe Richards and Peter Singer are philosophers, with the Darwin@LSE program located in the Centre for Philosophy of Natural and Social Science at the LSE.

This linkage between the sociobiology/EP controversies and that grouping of academic debates often described as the 'science wars' is extensive. During the 1990s, the emerging area of science and technology studies (STS), came under attack from prominent scientists in the US and UK. This was largely because STS scholars, largely from the social sciences, seek to understand how the sciences work as a social

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[24] For more extensive discussions of these issues, see Hughes (1991) and Malik (2000)

[25] A good example would be the recent episode of controversy over *Darkness in El Dorado* (Tierney, 2000), a book alleging that physical anthropologist and sociobiologist Napoleon Chagnon engaged in widespread abuses of the Yanomamo Indians he studies. The charges were strongly denied, but resulted in bitter controversy between physical and social anthropologists. Prominent evolutionary psychologists such as John Tooby have also been strongly engaged in defending Chagnon (see, e.g., Tooby's website http://www.psych.ucsb.edu/research/cep/eldorado/)

enterprise, and argue strongly against the older, philosophies of science, which hold that science is not social and has special access to objective knowledge about the world.[26] Such models of science are widely held by evolutionary psychologists, and two of the most prominent 'science warriors' in the UK, Richard Dawkins and Lewis Wolpert, are both allied to the EP movement.[27] A 'science wars' book was written by one of my interviewees, Robin Dunbar (1995) and the topic comes up fairly frequently on the evolutionary psychology mailing list (which science warrior *par excellence* Paul Gross also subscribes and contributes to). Finally, one of the last of the Darwin@LSE public seminar series was a notoriously ill-tempered debate between science warrior Alan Sokal and STS scholar Bruno Latour in 1998. These connections have been noted by Hilary Rose in her discussions of EP (Rose, 2000), as well as by Malik (2000) and Collins (2000). Sociologist of science Ullica Segerstrale also remarks upon this in her history of the sociobiology debates (2000, ch.17), but she has little to say on the underlying reasons for these links, other than that the science wars were a struggle for "the cultural authority of science" (p340). This would concur with Gieryn's (1999, 336-62) conclusion that much of the science wars controversies were episodes of boundary work, in which the traditional autonomy and authority of science were defended, whilst attacking the legitimacy of social scientists to be studying science in this way.

This issue was very difficult to get to grips with in the interviews and frequently led to quite puzzled responses from people who were very unsure of what I was actually asking about. However, I felt that this comment in particular may help throw some light on why evolutionary psychologists felt themselves to be so strongly aligned with the 'science' end of the science wars.

> it's [the science wars] taking a fundamentally scientific world view, as opposed to people who think there is something else, something transcending, something, I don't know what it is, then obviously anybody who takes this view *ought* to, ought to be Darwinian about human beings as well.
> (Respondent 3 - academic author, evolutionary psychology, Darwin@LSE member: interview, 23/01/02)

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[26] This is, of course, closely related to the 'canonical account' of science described in Chapter 3.
[27] Dawkins is at times critical of EP, as described above, but is also broadly supportive of the movement, having worked closely with Helena Cronin in the past and writing positive reviews for EP books. Wolpert has written a popular book arguing for the evolutionary roots of depression (Wolpert, 1999)

When I could get interviewees to articulate their thoughts here, they often were along these lines – that for them a 'rationalist' view of science was *automatically* aligned with a Darwinian view of humans and vice versa.

Despite all of this, social scientists have not on the whole become very involved in public controversies over evolutionary psychology. The academics who have been involved have been combinations of biologists (Steve Jones,); sociobiologists (Patrick Bateson, Tim Birkhead, Sarah Blaffer Hrdy); longstanding critics of sociobiology/EP (Stephen Jay Gould, Steven Rose, Hilary Rose) and feminists (Lynne Segal), who are very directly concerned with EP's arguments about gender. The developmental psychologist Annette Karmiloff Smith has been involved, but her intervention has been relatively minor.[28] The major thing that these people hold in common is that they all work in subjects which evolutionary psychology was making boundary claims about, but are not members of the core-set of evolutionary psychology, as is made plain here by one of the contributors to *Alas, Poor Darwin*:

> So I think what we were trying to do in that [the book] was to position a text across a variety of disciplines, because by then we were very conscious of how it affected a multiplicity of disciplines. It had got a lot of people very, very cross, about the damage being done to their beloved philosophy, their beloved this, their beloved that, and were actually prepared to say so very crisply and very fast. And so I think it was very much designed as a cultural intervention [...] And I suspect it worked! (Respondent 19 - academic author, feminist, sociology: interview, 21/01/02)

A possible exception to this might be one of the most publicly visible sociologists in the UK, Anthony Giddens (director of LSE), who has a statement on his webpage about the need to defend the social sciences "against the current trend toward the natural sciences." (Giddens, 1999). However, I have never come across any more public interventions from him in the mass media, nor have I ever seen any other public intervention from other social scientists. Considering the ferocity of evolutionary psychology's attacks on the social sciences, this lack of visible response is quite curious, and from the perspective of someone just joining the field, quite worrying, especially in the light of comments like this from biologists:

> I think evolutionary psychology has a tremendous amount to offer to the social sciences, the old-fashioned social sciences, in fact I don't think they can do without it. I mean, basically sociology is terribly short of ideas, talk to Anthony Giddens or

[28] Comprising a chapter in *Alas Poor Darwin*, and a few articles coming out of a public lecture.

> someone and try to find some interesting intellectual ideas there - it won't work, because there's nothing there.
> (Respondent 10 - academic author, sociobiology, Darwin@LSE member: interview, 01/10/01)

Giddens' near solitary position as a 'visible sociologist' in the UK, with very few of his contemporaries engaging with the public domain means that he becomes, by default, representative of the social sciences as a whole. As such, his particular political stance and very close alignment with the Blair government is of particular concern considering natural science critiques of the social sciences as contentless and ideologically loaded.

I would argue that a very important part of the 'turf wars' being carried out around evolutionary psychology is, like many disputes over evolution and humans, a conflict between the natural and social sciences. However, unlike previous episodes such as the Sociobiology debate, this is *also*, very importantly, a conflict between two radically different visions of, and approaches to, the social sciences. The evolutionary psychology vision of social science is a positivist, naturalist,[29] scientific (or scientistic) one, and is crucially engaged in an attempt to position itself as part of the natural sciences, whilst simultaneously trying to bring the rest of the social sciences with it. These seemingly contradictory movements may be in part be explained by the positioning of the debate toward multiple audiences, which will be explored later in the chapter, in section 7.4.

Having described the academic disciplinary ecology surrounding the core-set of evolutionary psychologists, and some of the boundary disputes that have taken place, both immediately around EP and in the context of the natural/social science split, I will now move on to consider a final layer of demarcation around evolutionary psychology. This is the broadest front on which the evolutionary psychologists have had to do boundary work, and is perhaps the most problematic considering their forays into the public domain. These are, of course, the traditional boundaries constructed around the sciences as a whole: demarcations between science and politics, science and lay knowledge, and between science and 'popular science'.

[29] 'Naturalist' in this sense is meant as, like or a part of, the natural world - as in 'natural science'.

7.3.4 Evolutionary psychology as 'science'

As I described in the previous two sections, evolutionary psychology exists at the intersection of multiple boundaries of the sciences: between individual academic disciplines, theories and approaches, as well as between the social and natural sciences. It also exists at many of the boundaries traditionally drawn around the sciences as a whole, in part because its subject matter overlaps with the non-scientific domains of politics, relationships and common-sense knowledge about the world. Evolutionary psychologists' activities in the public domain also bring them into the decidedly 'not science' worlds of the media, commerce and public attention, even fame. Because of these issues, evolutionary psychologists and their critics must perform a high wire balancing act in their positioning and repositioning of the subject in different situations. Each side constructs itself as the more scientific, less political, more legitimate one, while construing opponents as 'unscientific', politicised, publicity seeking, and so on.

For these reasons, many of my interviewees seemed to feel a definite need to draw a line between 'good' and 'bad' popular science, by putting forward examples that, for them, fell outside of the boundaries of legitimacy.

> I think that I'm embarrassed by some of the people like Robin Baker, you know the Baker and Bellis books on human sexual behaviour are frankly, they, they, you ought to use them in some of your teaching but at the same time they are cringemaking in terms of the way that the work is presented.
> (Respondent 2 - academic, psychology, sociobiology: interview, 03/08/01)[30]

Interestingly, these comments came from not only the scientific or academic actors, but also from the media professionals.

> And there's all that rather dubious stuff about hip to waist ratios, which I have to say I find some of the least convincing of all this stuff, let alone Thornhill and whatsisname on rape, which is just kind of...[trails off in disgust]. And of course those people let the side down horribly, I was trying to tell Helena, that rape book was just...[again lost for words] And of course the media love that! Because it's so over the top, and explosive and all that, it's kind of the more sensible you are the less interested they are in you.
> (Respondent 13 - nonfiction publishing editor: interview, 22/01/02)[31]

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[30] By way of explanation, Robin Baker is the author of several books of sexuality and evolution including most notoriously *Sperm Wars* (1996), in which he illustrates aspects of Darwinian theory with various fictional sexual scenarios. The Baker and Bellis (1995) book referred to here was a slightly more 'academic' style text, but with very graphic illustrations.

This also illustrates the very important point that the construction of boundaries in and around the sciences is carried out by and in the interests of actors *throughout* society. It is as necessary for the rest of society to have ways of distinguishing between legitimate and illegitimate knowledge as it is in the interest of scientists to do this.

Probably the most intensely policed and contested boundary in the whole of the evolutionary psychology controversy is the borderline between science and politics. If, as Haraway (1986) argues, 'primatology is politics by other means', then evolutionary psychology can run the risk of being seen as simply politics. The most headline grabbing claims of evolutionary psychology have often been intensely political ones, albeit not in the conventional sense of 'party politics'. Claims about the nature of heterosexual desire (or mating preferences), the causes of child abuse and the roots of the 'glass ceiling' in women's careers are all political, especially when they are presented as having a role to play in government policymaking. Such moves into the political domain were particularly achieved through collaborations between Darwin@LSE and the thinktank Demos (Curry, Cronin and Ashworth, 1996; Cronin and Curry, 2000).[32] It is these kinds of claims that lend credence to an important criticism of EP (many dating back to Sociobiology and beyond), that it and other Darwinian approaches have been biased towards conservative political agendas, or provide scientific justifications for them.

To help counter these criticisms, evolutionary psychologists often invoke a principle from philosophy known as the 'naturalistic fallacy'. This is described as "The inference of an 'ought' (or 'should') statement from an 'is' statement" (Radcliffe Richards, 2000, p230), an idea derived from Hume via the philosopher G. E. Moore (1903). Such a move does several things for evolutionary psychologists, all of which help make their case. Most importantly, it creates a distance between the claims they make about people and the political implications of these claims, meaning evolutionary psychologists can deny any moral responsibility for them, or for the uses that others might make of

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[31] The hip-waist ratio work refers to research findings on men's preferences for a particular kind of "curvy" female figure (e.g. Singh, 1993). Thornhill and Palmer (2000) argue for the evolutionary origins of male on female rape.

[32] See Chapter Five, section 5.2.

them.[33] It helps to bolster the evolutionary psychologists' claims to have access to objective, scientific truths about human nature (this also helps to explain their position in the Science Wars). It also delegitimises criticisms of evolutionary psychology made on political grounds (that EP is sexist, racist, and so on), by making critics guilty of committing this fallacy and being motivated by politics or even 'ideology', rather than science or a concern for the 'truth'. Interestingly, the naturalistic fallacy tends to be discussed by evolutionary psychologists almost as if it is law of nature, without any discussion on *why* it is a mistake to infer how things should be from a statement of how they are.[34] However, within the evolutionary community this is not universally accepted, most notably by E. O. Wilson himself, who argues straightforwardly that *all* human knowledge should be derived from science (see Wilson, 1998; Segerstrale, 2000, ch.18).

As well as constructing a demarcation between itself and the domain of politics in general, evolutionary psychology works hard to distance itself from conservative politics in particular.[35] This is a particularly important part of the general project to create distinctions between EP and sociobiology in the public domain. This is done in two major ways: by evolutionary psychologists overtly associating themselves with liberal / left agendas, and by asserting a complete lack of interest in race. In general, evolutionary psychologists did this by association, such as the collaboration with the leftwing thinktank Demos, but also more overtly, such as with the *Darwinism Today* publication of philosopher Peter Singer's *A Darwinian Left* (1999), which argued that the left could and should embrace Darwinian principles. Evolutionary psychologists also argued that they are only interested in features which are 'human universals' and not in individual or group differences. This, combined with their assertion of Dawkins' (1976) gene, rather than group or species based natural selection, serves to publicly distance EP not only from sociobiology, but also from behaviour genetics and academics who argue for links between race, genetics and I.Q. (e.g. Herrnstein and Murray, 1994). At the same time as denying an interest in racial differences, evolutionary psychologists are very interested in sexual differences, as has been outlined here. In the political landscape of

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[33] This is particularly crucial considering the way in which Far Right organisations have in the past embraced sociobiology to justify their views, and that the current leader of the BNP continues to do so with evolutionary psychology (see Kevin Toolis, 'Race to the right' *The Guardian*, 20th May 2000).
[34] For example, EP discussions of the naturalistic fallacy often invoke it without any reference to a source.
[35] See Chapter Five, section 5.4.1 for more in-depth discussion of this kind of political repositioning of EP.

the 1990s US/UK, the politics of gender work in a very different way to the politics of race. In this context, arguments that there are fundamental differences between men and women simply do not carry the same reactionary connotations that such assertions about race do.[36]

Evolutionary psychology must also balance its demarcation with the domain of 'ordinary' knowledge known as common sense. The relationship between EP and such forms of lay knowledge, or 'experiential expertise' as Collins and Evans (2002) have described it, is explored in proper detail in the previous chapter. However, it is important to note that evolutionary psychology, like all social sciences, seeks to assert expert knowledge not available to ordinary people over the stuff of their daily lives. It is the way in which EP reaches into this domain to draw upon 'common sense' notions about gender and human nature which provides a good deal of its appeal in the public domain. However, if it goes too far with this it risks losing its credibility, particularly as the 'objective science' it works so hard to be. This is tied in with yet another boundary: the one constructed between science and the public domain, particularly in the forms of the media, commercialism and popular science. As I have described here, the example of evolutionary psychology is one in which academics have spent a great deal of time and effort communicating on a popular level, by means of popular or semipopular books and appearances in the rest of mass media.

These moves into the public domain have been supported by wider changes in the relationship between the sciences and the public domain.[37] Traditionally, the activities of scientists in the public domain were very heavily policed by other scientists and their institutions. Popularisation was considered to be a very low status activity, often only to be safely undertaken by fully established 'visible scientists' such as (in the 1970s) Linus Pauling, Margaret Mead and B.F. Skinner (Goodell, 1977). Even then, people who engaged in 'too much' popular work ran the risk of losing scientific respectability, as in the case of Carl Sagan, who suffered a good deal of criticism from scientists at the height of his popularity. This situation has changed in the past twenty years, with the new pushes toward greater public understanding of science meaning that scientists are

[36] As I have argued in Chapter Five, section 5.3.
[37] Discussed, if from a slightly different angle, in Chapter Two, section 2.2.

being encouraged by funding bodies and institutions to communicate. In addition, the boom in popular science publishing, which occurred during the 1990s, has also made it much more respectable for scientists to engage in popular communication.[38] Changing attitudes toward popular science can be seen in the way most research funding bodies, universities and scientific associations in the UK now offer advice, support and incentives for scientists to communicate their work in the media. They can also be seen in more exemplary events such as the election of Richard Dawkins as a Fellow of the UK's Royal Society in 2001, 'for his work on evolution and for raising the public understanding of science' (Royal Society, 2001).

These changes do not mean that there is no longer a need for scientists to do boundary work around popular science. If anything, it means that scientists need to protect their domain of expertise even more than before, and often by use popular science itself as a tool to do this (e.g. Mellor, 2000). There are still potential risks for scientists in undertaking popular communication, as described by this senior academic discussing junior colleagues:

> So it can be a mistake for academics to think they can do what John Brockman says they can do, which is go directly to the public with their ideas [39] [...] It can be a mistake for scientists to do this and I think it can particularly be a mistake for young scientists, to do this. They see the grand examples of the Pinkers and the Dawkins and think, 'I can do that', and they're going to find that that may be the end of their career. You still have to earn your brownie points by publishing in the right journals and doing the right things.
> (Respondent 10 - academic author, sociobiology, Darwin@LSE member: interview, 01/10/01)

Over enthusiastic, excessive or premature (either in terms of the science or the career of the scientist) popular discussions of science are still seen as illegitimate, especially from within the academic arena. This means that rhetorical manipulation of the category 'popular science' occurs throughout these debates over evolutionary psychology, despite the obvious influence of popular books such as Dawkins' *The Selfish Gene* (1975) in the

[38] See Chapter Four, sections 4.2.2 and 4.4 for further discussions of the popular science boom.
[39] John Brockman is the science publishing agent mentioned in Chapter Four, section, 4.2.2. His ideas about the 'Third Culture': a public space for scientific debate, have been very influential on some of the evolutionary psychologists (see Brockman 1995, and his website *Edge* http://www.edge.org/).

area.[40] However, an admission of the fuzziness of the science-popular science boundary around evolutionary psychology would run the risk of undermine its case to be good, legitimate science. A good example of this kind of manipulation can be seen in this review of the Roses' *Alas Poor Darwin* (2000) by evolutionary psychologist Geoffrey Miller. Miller attacks the Roses for focussing only on the 'popularised' version of evolutionary psychology while ignoring the 'real science' in academia:

> The "evolutionary psychology" castigated here is not the modern science of human nature as it is actually developing, but a simplified, out-dated, third hand version that focuses too much on the writings of the field's best known popularisers such as Steven Pinker, David Buss, Matt Ridley and Dan Dennett.
> (Geoffrey Miller, 'Taking a pop at psychology' *Evening Standard*, 3rd July 2000)

He goes on to further delegitimise the Roses' intervention by underlining the boundary between science and the public domain.

> Any critic who knows enough about the current research to make intelligent suggestions for improving it might as well just join the scientific endeavour, and publish peer-reviewed scientific papers showing that their alternative leads to better theories and more discoveries. Instead, these writers have taken half-baked criticisms straight to the media, hoping that public hostility would lock away the scientific study of human nature in a tomb labelled "taboo".
> (Geoffrey Miller, 'Taking a pop at psychology' *Evening Standard*, 3rd July 2000)

In a similar manner and for the same reasons, actors in evolutionary psychology constantly engage in boundary work around the issue of engagement with the mass media, as seen in the following interview quotes, firstly from someone critical of evolutionary psychology, discussing the activities of Darwin@LSE:

> It was its [EP's] mediatrics which were its most successful activity, and it was truly astonishing that they claimed at the launching of evolutionary psychology in this country, they actually did it in the journal of a New Labour thinktank, and this is not where we launch disciplines from conventionally. I mean this is a highly theatrical, media obsessed performance, and one of the things which they carried out, I think on the level of a complete *tour de force*, was this incredibly high media profile, with rather little academic substance underneath.
> (Respondent 19 - academic author, feminist, sociology: interview, 21/01/02)

[40] This trend continues, with high academic citation rates for popular EP books such as Robert Wright's *The Moral Animal* (242), Matt Ridley's *Red Queen* (428) and Steven Pinker's *How the Mind Works* (432). Data from Web of Science's Social Sciences Citation index database, for all years to June 2003.

In contrast, this member of the Darwin@LSE group stressed the importance of media and public interest in creating the high public profile of the group, and their belief that it was 'the right sort of popularisation'.[41]

> I didn't go to the media, the media started coming to me, but then once they did I thought, well, you know, that is very much what I think is right about the science, it shouldn't just be a small academic seminar, if the quality is the same, you just have more people, then that seems ideal, and it does seem to be the best of all worlds, which it was. [...] Immensely high quality, and so it was exactly the right sort of popularisation. And then because it was going well, and because as I say, I do believe in spreading the word about science, so then I just began to get good relationships with the media, and worked on that, but it was always very much the media came to us.
> (Respondent 3 - academic author, evolutionary psychology, Darwin@LSE member: interview, 23/01/02)

In this section, I have described the layers of demarcation and incidents of boundary work which have been carried out around evolutionary psychology, both in the media and in interview discussions. I have characterised these as occurring in three broad layers radiating out from the core-set of evolutionary psychologists, as identified alongside their central ideas in section 7.3.1. Evolutionary psychology has challenged, reconstituted or reinforced the pre-existing demarcations within the complex disciplinary ecology around the study of evolution and humans, between the natural and social sciences as well as in a major conflict within the social sciences. Through its subject matter and in its activities in the public domain, EP has also had to negotiate the traditional demarcations made between science and other areas of society, such as politics, lay forms of knowledge and the public domain in the forms of 'popular science' and the mass media. Having now established academics' 'turn to the public' in popular evolutionary psychology in section 7.2, and the multiple layers of boundary work taking place in this case, I will now address the issue of the 'publics' of EP. Through indirect means, I will try and get some indication of what kinds of people all this effort might actually have been aimed at.

[41] To be fair, the initial size of the rooms set out for the Darwin@LSE seminars, and multiple recollections from interviewees that the early sessions were massively overfull, does suggest that they were at first taken by surprise by the level of interest in the seminars.

7.4 PUBLICS AND AUDIENCES: PROJECTED SOCIAL WORLDS IN POPULAR EVOLUTIONARY PSYCHOLOGY

My research has addressed the *production* of popular evolutionary psychology by academics and media professionals, and the *mediation* of the debate in the popular domain. What it cannot do, without turning into a different piece of research (and getting far too big), is address who the audiences for this debate actually are, and what they think of it. However, I do feel that it would be negligent to completely ignore this issue, especially as understanding who these debates were aimed at can help me to explain why they were happening in the first place. With the research design I have adopted, I have had no way of accessing the actual social worlds of evolutionary psychology audiences, but I could and did try and find out what social worlds were being addressed by actors in popular EP: the *projected* social worlds of these audiences.[42] Coverage of evolutionary psychology has not been spread evenly across the entire mass media, but has in fact been concentrated in specific sites, largely in the elite media. Therefore some inferences can be made through what is known about the consumers of these media forms. Furthermore, during the research interviews I asked people directly about this issue: who they thought the audiences for evolutionary psychology were.

In Chapter Four, I described the media forms which have been most important for popular evolutionary psychology appeared, namely 'popular science' books, broadsheet newspapers, news and popular science magazines, public lectures and Radio 4. These media are in general elite, rather than popular, wider circulation forms, carrying lengthy, detailed coverage and catering to middle class, educated audiences. A good example might be *Prospect* magazine, which describes itself as:

> the most intelligent magazine of current affairs and cultural debate in Britain. Both challenging and entertaining, the magazine seeks to make complex ideas accessible and enjoyable.

It describes its readers as:

> typically aged between 35 and 55. They occupy senior positions in banking, law, finance and the media - or they are senior academics, civil servants, MPs or members of the Upper House. They are extremely well paid, highly educated, culturally active and computer literate. (Source - *Prospect* website http://www.prospect-magazine.co.uk/)

[42] I discussed this issue in detail in Chapter Two, section 2.4.2.

This is possibly an extreme example, and should be read in the context of the magazine selling itself to potential advertisers, but still gives a good indication of the kind of audience being addressed here. When questioned about this issue, most of the people I spoke to (both academics and media professionals) gave an initial response that they had no idea what or who the audiences for EP were. However, gentle probing revealed that, although they had no direct knowledge, they did have some strong intuitions of who it was they *thought* they were talking to.

> But I think people are just quite excited, a lot of people are quite excited by science, as I say a lot of middle class professionals maybe who went to university, did a science degree maybe, but are now doing a really boring job and want something more stimulating, food for thought in their spare time.
> (Respondent 6 - academic author, evolutionary psychology, Darwin@LSE member: interview, 01/08/01)

During the interviews, there were many descriptions of 'dinner party conversations' and of the audiences as 'intelligentsia', 'liberal intelligentsia', 'upmarket intellectual arenas', 'intellectuals in some sense', 'the North London intelligentsia' and so on – as well as this potentially revealing response:

> Me: What kinds of people do you know or do you think are the audiences for your work?
> Interviewee: Both academics and the public, as I said.
> Me: But what kinds of public? What kinds of people do you think are engaging with this?
> Interviewee: Well, [pauses] I'm not sure how I would define it.
> Me: Well, when you write what kind of reader do you have in mind?
> Interviewee: I was going to say somebody like me, but err… [laughs, embarrassed]
> (Respondent 12 - author, freelance science journalist: interview 02/10/01)

This raises the question of quite how 'popular' this, and indeed many forms of 'popular science' actually are, as much of the popular science that appears in the media does so in a similar array of media sites to those seen in popular evolutionary psychology.

Within this already elite audience, there are more specific groups such as academics, politicians, business people and those with a specific interest in science, each of which have specialist publications (e.g. *Prospect*, *The Economist* and *New Scientist*) which have covered evolutionary psychology. The collaborations between evolutionary psychologists and the centre/left thinktank Demos, as well as Darwin@LSE's forays into policy advice are particularly suggestive of this. These 'specific' audiences included

many kinds of professional groupings, but it seems that academic audiences are also of particular importance.

> I suspect the bulk of the readership is amongst scientists themselves, for who it's not their area. And that's a function of modern science, it's become so specialised that they know very little about each other's areas, and actually it's become a very interesting form by which scientists can talk to each other, in a genuinely interesting, reliable way and that's probably one of the biggest readerships of all. And I use 'science' in the loosest term, everything anyone will and anyone related to that field, tangentially, professionally in that field, so if there's a book on the body, it could be anyone from physiologists, academic physiologists to health professionals.
> (Respondent 11 - popular science publishing PR: interview, 28/07/01)

Interestingly, this respondent sees these potential academic audiences as those 'for who it's not their area': outside of the core-set of the subject under discussion in a given book. For this respondent, intimately involved with popular science publishing, this would hold not just for evolutionary psychology, but for most, perhaps all popular science books. In the case of evolutionary psychology, this layer of academia outside of the core-set is also where the major public criticisms of evolutionary psychology have come from (see section 7.3.2).

The academic actors themselves were very keenly aware of this potential audience of peers, and as an extension of this, the students that are being taught by those peers and are the next generation of academic actors.[43] Many of them saw popular books as a crucial, or at least useful, means of convincing and enrolling other actors towards their own position in the evolutionary psychology debate.

> Oh I know who I see as the audience, I see students... because students are the ones you're really playing for, because students are the ones who are going to be producing knowledge amongst them... They actually carry on in a very interesting way, a whole cultural analysis within particular peer groups, and you can actually intervene in those debates amongst students, or at least try to, try to is the right word, because you haven't the faintest idea whether they'll take you up or not. If they do, you're actually having a very important conversation.
> (Respondent 19 - academic author, feminist, sociology: interview, 21/01/02)

Discussions with my interviewees again revealed the influence of the publishing agent John Brockman's ideas (see Brockman, 1995) in the social worlds surrounding popular

[43] This could also be another potential way of reading the Max Plank quotation beloved of the evolutionary psychologists, quoted in full on page 276. In my experience as an undergraduate, popular books were used several times, generally as bases for seminar work or as further reading, rather than as textbooks, and this practice was confirmed by several of my academic interviewees.

science, but also particularly strongly upon the evolutionary psychologists. Their marginal position in academia, combined with the interdisciplinary nature of their subject, means that many EPs see popular science as an ideal medium through which to exchange ideas with each other, as well as with other academics.

> I mean academics read these books, this is the thing. John Brockman's idea of the Third Culture was not that it was popularisation, academics dumbing down their ideas to a general public. It's academics talking to other academics, but in a different field, or maybe in a slightly different bit of the same field, and it's that need to, they need to communicate clearly 'cos they're not talking to someone who's in exactly the same field, but they're talking with other academics, they're conducting a debate in public with other academics. So that's why the other academics read these books, if you ring up, if I ring up any of my academic colleagues, prominent academics, the first thing we'll talk on the phone is, 'have you read the new book by Matt Ridley, or Mark Ridley?' or, 'have you read the latest book by Brian Greene?', or 'what's Richard Dawkins' latest book like?' Academics are reading those books, so it's, kind of, that's where the debate is happening.
> (Respondent 6 - academic author, evolutionary psychology, Darwin@LSE member: interview, 01/08/01: my emphasis)

Reflecting upon his own experiences of popular science writing, one of the academics also discussed how for him, popular writing was useful in other ways, suggestive of Ulrike Felt's (2000) description of the popular domain as a 'creative space' for scientists.

> But when I do popular science writing, I write with a popular science hat on, and to some extent, they're much more relaxed and I don't claim that the research underpinning them is meticulous, and I don't intend it to be. So something like [book title], I wrote it in three months. Now that was written kind of because it was fun to do, and it was an interesting story to talk about, but also in the process I was kind of trying to pull a whole load of disparate ideas together in my own mind, all these things I'd been doing, trying to make sense of them, and academically that's what that book did, but it was really written to entertain. What surprised me was that it then ended up being reviewed in places like Nature, it really was quite shocking[...] And a lot of people clearly, particularly in the humanities and the social sciences took it very seriously, as a serious scientific work, well it kind of is, it's not untrue! It's just I'm having fun, and wanted to sort of idly, well make sense of a lot of things, but also kind of throwing out ideas, speculations, so I don't want to be held to account for every last word.
> (Respondent 5 – academic author, behavioural ecology, evolutionary psychology: interview, 27/09/01)

The popular domain allows scientists and academics to write about their work in a much less restricted way than can be done in academic journals, where any statement must be supported by evidence of some sort. As can be seen in these comments, certainly this actor also felt that popular writing involved a different, lesser level of responsibility

regarding the reliability of knowledge, and was somewhat taken aback when his popular work was taken seriously by others. This is particularly helpful for a newly developing area like evolutionary psychology, where very many theoretical ideas are developing but not so much empirical work has been done to match them. What also comes across in the quote is the way in which such writing can be entertaining for authors as well as for readers, which is often ignored in many discussions of popular science. Emerging from these discussions is a picture of an episode of popular science, as evolutionary psychology, providing:

> an open space where stimuli, ideas and information may be merged and exchanged among different actors and across disciplinary fields, in the absence of the constraints and conventions which bind scientific work and communication at the specialist level. (Bucchi, 1996, p386)

7.5 CONCLUSIONS

> I mean that was, it [popular evolutionary psychology] struck me as a very fine example of how to play the media to establish your ecological niche, and they [evolutionary psychologists] did it very successfully.
> (Respondent 5 – academic author, behavioural ecology, evolutionary psychology: interview, 27/09/01)

At the beginning of this chapter, I described the work of Massimiano Bucchi (1996, 1998), who makes a case that popular science can, from time to time, move from a generalised 'popularisation' mode to one of 'deviation'. I would argue that the case of popular evolutionary psychology fits very well into Bucchi's description of this phenomenon in science communication. In episodes of deviation, knowledge bypasses parts of the ordinary route taken from academia into the public domain and scientists often undertake 'direct' communication activities in public, rather than allowing communication professionals such as science journalists to do it for them. Frequently, all or part of this will happen before the knowledge claims in question have achieved closure in academic arenas. Episodes of deviation are also generally associated with, and possibly caused by, some form of conflict over the boundaries drawn within and around the sciences. Bucchi (1996, p383) characterises these as potentially occurring at three 'levels' of boundary conflict: associated with the establishment of new theoretical traditions; conflict at a 'disciplinary' level (i.e. between physics and chemistry) and in the constitution and legimitation of disciplines, or science as a whole. I would see these

levels as roughly equivalent as my three 'layers' of conflict over evolutionary psychology: over 'narrow' vs. 'broad' evolutionary psychology; the natural and social sciences; and around EP and politics, lay knowledge and 'popular science'. Bucchi argues that as such boundary disputes become more 'internal' to the sciences, they become less important and therefore less publicly visible. This would be corroborated by the observation that the weakest and least publicly recognised boundary described here was the attempt to define 'narrow' evolutionary psychology as separate and different to other approaches in the area such as sociobiology. As I have described here, evolutionary psychology contests boundaries at almost every scale of the scientific enterprise, *over the same time period and in the same places.* It is also new, at least in name, and has worked hard (if not entirely successfully) to distinguish itself from previous Darwinian approaches to humans. If there were ever a subject that needed to take the 'deviation' route in science communication, then I would argue that evolutionary psychology was most certainly it.

Chapter VIII:

Conclusions

8.1 INTRODUCTION

8.2 MAJOR CONCLUSIONS

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8.1 INTRODUCTION

Because the chapters in this thesis have been quite extensive, I am going to keep my conclusions 'short and sweet', bringing together the main threads of the research into one place. To start with, I give a potted answer to the original question I posed in my Introduction, which came to me when I first encountered evolutionary psychology in the media in 1998. Why did evolutionary psychology appear in the media as quickly and as prominently as it did during the 1990s, why had I not heard the label before, and why did this happen while the science in question was still considered to be controversial in academia? I then draw some wider conclusions from the thesis that I did not really set out to do, but have arrived at along the way. Firstly, I discuss how I think that my use of social worlds theory in my research and thinking about sciences, media and publics takes forward the project of 'critical PUS' research, in practice and in reformulating models. Secondly, I believe that my research has interesting implications for researching the communication of, and 'lay engagement' with, scientific subjects that are about people. Finally, I will briefly reflect on the popular evolutionary psychology episode from the perspective of a new decade, addressing some of the major developments since 2001, and on possible new directions that the subject may be heading in.

8.2 MAJOR CONCLUSIONS

8.2.1 Popular Evolutionary Psychology in the 1990s: Why?

The answer to this question is in some ways quite simple and in others more complex. It involves the actions, interactions and co-operation of actors from various academic and media social worlds, which then were mutually shaped by the underlying properties of the subject itself, and various social and political contexts on the UK at the time. There was a concerted effort made by some members of the core-set of evolutionary psychologist and their supporters during the middle part of the 1990s, which was strongly structured around the publication of 'popular science' books on the subject. In the UK, the work of the Darwin@LSE group in organising public events, providing a meeting point for academics, publishers, journalists and others, and helping to provide 'evolutionary psychology' stories to the media by providing reliable and articulate spokespeople for the subject was instrumental in creating popular evolutionary

psychology. Evolutionary psychology needed to do this because it was in a precarious position in academia in the early 1990s, with extremely low levels of discussion in academic journals (at least under the label of 'evolutionary psychology'). Practitioners were largely located in hostile social science departments, but were also pushing hard to demarcate their approach from older, natural science based evolutionary approaches to humans like sociobiology. This set up their communication efforts to move into a 'deviation', as compared to 'popularisation' frame, in which practitioners needed to communicate directly into the public domain, in order to reach out and convince other academics outside of the core-set, located in a wide variety of disciplines. This pattern was subsequently co-opted by other academics, also outside of the core-set, who were critical of evolutionary psychology, and also wanted to reach colleagues in a wide variety of disciplines. This was largely for the same reasons as the evolutionary psychologists: to convince these audiences of peers and other 'elite' actors such as policymakers that their claims about people were right and their opponents were wrong, or at least controversial.

However, these efforts on their own would not have been successful at creating the popular evolutionary psychology debates documented in this thesis. In the UK at the time, there were crucial shifts occurring in the way that scientific institutions were relating to the rest of society. These changes were twofold: on the one hand, institutions such as the UK Royal Society and the research councils had launched campaigns to promote the public understanding of science (PUS), making communication activities more 'respectable' than they had been in the past, and the boom in popular science, particularly in publishing, had forcefully brought home public interest in, and the profitability of, such activities. Popular discussions of evolutionary psychology and the activities of Darwin@LSE made the best of these changes, and co-operated with the needs and working practices of the media to provide them with useful content for coverage. Examples of this included the orientation towards 'features' rather than news content through freelance journalists, the availability of articulate 'public experts' and reliability of content from book publications, and a general shaping of discussion to work with news values through an emphasis on discussions of sexuality and gender politics. The subject matter of evolutionary psychology also helped it to fit with news values, because media actors saw it as a science about people and

relationships, which was easier for 'non-experts' to discuss and understand, and indeed happily participated alongside the academics in debates over the subject.

Finally, the detailed forms of popular EP claims were closely mutually shaped by some specific social and political contexts of the UK during the 1990s. Examples of this kind of mutual shaping could be seen in particular claims, such as those made about the evolutionary origins of adultery and divorce, or of 'universal standards' of human beauty. It could be also seen in wider themes picked up in media discussions of EP, such as the idea of the 'battle of the sexes', or the problems encountered with men and masculinity as gender roles change in our society. The more conventionally political context of the rise to power of centre-left governments in the US and UK was important, with evolutionary psychology strongly pitching itself as sympathetic to the politics of the liberal-left, and distancing itself from the right. In addition, some evolutionary psychologists made more direct forays towards and links with policymakers. Finally, a wider atmosphere of optimism about science in general, and biology in particular during the late 1990s also helped to foster discussions of evolutionary psychology. This was seen in particular in widely publicised achievements in biotechnology such as the cloning of Dolly the Sheep in 1997, and the publication of the first draft of the Human Genome Project in 2000, and subsequently dropped off after this year.

8.2.2 Modelling Sciences, Media and Publics

I have found that my adoption of a social worlds approach as a theoretical framework for my research to be of great help in understanding the case of popular evolutionary psychology. It has helped me to think about the multiple social worlds of the sciences, media and publics that have been involved, their interests, modes of practice and means of co-operation and communication. Examples of this kind of thinking have included: the importance of the worlds of features and freelance writing, rather than 'news' in shaping coverage of EP; the importance of news values; and the reasons for evolutionary psychologists and their critics to go into the public domain to make their arguments in the first place. Overall, I think that one of the most important ways in which social worlds theory has helped me is by forcibly equalising my analysis

between the social worlds of the media and academia, as my own academic background had originally led me to orient overly towards the academic domain. I also feel that the social worlds framework could be of help in the wider areas of research about science in public, in practice, and also in the ongoing project of creating new 'critical PUS' based models of relations between multiple sciences, forms of media and publics. As a contribution to this effort, I have put together a provisional 'first stab' at a model of the various social worlds that were involved with popular evolutionary psychology during the 1990s.

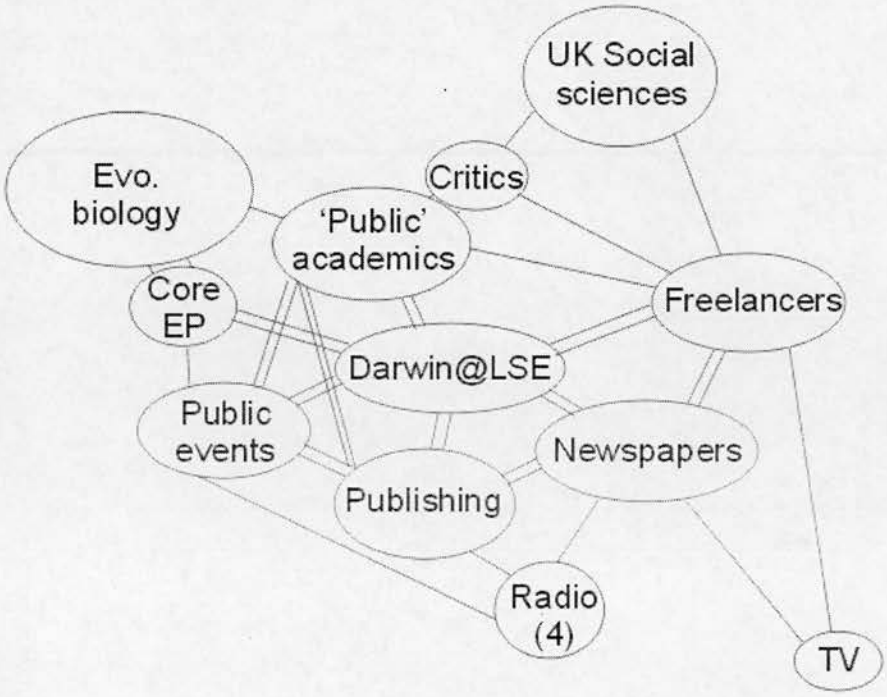

Fig. 1: Social worlds network of popular evolutionary psychology in the UK of the 1990s

The shorter the line, the closer the connection between worlds: similarly a double line indicates a very close or well-instituted link, such as that between publishing and news papers. As ever in model building, there have been necessary simplifications made here: for example I have not represented the overlapping nature of social worlds because it would make the diagram too confusing. For example, somebody like Richard Dawkins would probably belong to most of these groupings, but to show this would completely obliterate the shape of the model. Another example is that there are no links between 'core EP' and 'UK social sciences' despite the fact that the core evolutionary

psychologists are largely social scientists. This is for two reasons: firstly the core evolutionary psychologists are largely located in the US, and secondly because in terms of UK popular discussions, there is virtually no contact between the two groups.

8.2.3 Communication, 'Lay Engagement' and Science about People

The whole issue of how evolutionary psychology and perhaps some other sciences about people may differ in the ways in which people relate to them is really something that I have stumbled upon while doing this research. Although from an early stage I had a suspicion that the media discussions of EP were somehow 'different' from that of other sciences, I was very unsure of how exactly this was the case. It was only when I had found through quantitative work how exactly this coverage was different, and discussed these findings during my interviews, that I reached a more detailed understanding of what was going on. Almost all of the actors in popular evolutionary psychology, both in academia and the media, felt that the subject matter of popular EP, being about people and their relationships, made it easier to communicate, 'popularise' or gain an airing in the media for the subject. Furthermore, many comments were made suggesting that this subject matter also meant that 'everyone feels they have something to say about it'.

Following these indications, I analysed the forms of expertise mobilised in the discussions of evolutionary psychology in the mass media, and found that the 'scientific' knowledge of the evolutionary psychologists was frequently compared with many 'lay' forms of knowledge about people, such as common sense, personal experience and folklore. At times these were used to reinforce evolutionary psychology knowledge claims, while at others they were used to delegitimise or even ridicule such claims. In other words, in public debates over evolutionary psychology, scientific and lay knowledge are often regarded to be of equal legitimacy. As such, popular evolutionary psychology must negotiate the boundary between the two domains extremely carefully: the subject matter makes it easier to discuss on a popular level, but the move into the public domain runs the risk of losing the demarcation between expertise and lay knowledge that most sciences enjoy. I have therefore argued that this finding may have

implications for wider research on communication of, lay people's engagement with, and the construction of expertise in many other sciences about people, such as the social sciences, as well as in certain areas of the biological and medical sciences.

8.3 EVOLUTIONARY PSYCHOLOGY: THE VIEW FROM A NEW DECADE

A recurring theme in several of the discussions in this thesis has been the ways in which the popular discussions of evolutionary psychology I have documented here have moved on since the late 1990s. Unsurprisingly, this shift did not occur precisely at the turn of the millennium, but has gradually occurred over the past few years, with the September 11th attacks providing another convenient, if somewhat facile marker of change for many people. My quantitative research has shown that discussions of not only evolutionary psychology, but also of related subjects like genetics, started to fall off after the year 2000, while qualitative work including interview material has suggested that this is an ongoing trend. It seems to me that the intense optimism and hype present in the media during the late 1990s around the biosciences has died off, to be replaced by a sense of fatigue and cynicism about scientific claims in the area, typified by reports of problems with and deaths of cloned animals. A good marker of this change could be a comparison between the amount of scientific hype and media attention around the rough draft completion of the Human Genome Project during the year 2000, and the almost unannounced full completion of the project in April of this year.

While popular evolutionary psychology is still around, and in fact several prominent books in the area have been published in the last year, the tenor of debate seems to have changed, largely towards a more nuanced and less oppositional atmosphere. The most recent book by science writer Matt Ridley could be seen as emblematic of this change: it is titled *Nature Via Nurture* (2003). As the title suggests, it is an attempt to move beyond the nature-nurture debate by discussing the many ways in which genetic expression operates through environmental influences. In a similar softening of positions, philosopher Daniel Dennett, who in the past engaged in longstanding controversy with biologist Steven Jay Gould over evolutionary theory, and once described Darwinism as a

'universal acid' (Dennett, 1995), has published his newest book, *Freedom Evolves* (2003), in which he argues humans are evolved to have free will.

On the other hand, Steven Pinker's newest book, *The Blank Slate* (2002), is probably his most hardline yet, attacking social science and 'leftwing' models of human nature as a 'blank slate'. However, it does seem that the book has not done as well as his previous ones, at least in terms of media coverage, and there have been several reviews in which he was criticised for spending too much time on the attack, and not enough time making a positive argument. One of the other major evolutionary psychology books to be published this year is developmental psychologist Simon Baron Cohen's *The Essential Difference* (2003) discussed in Chapter Five. On the face of it, this book would seem to take one of the strongest lines on gender difference yet seen in popular EP, arguing as it does that personality traits fall into groupings under the 'male brain and 'female brain'. Baron Cohen also reportedly delayed publishing the book for many years because he deemed it 'too politically sensitive for the 1990s'.[1] However, he does take pains to point out that not all men have a typical 'male brain' and vice versa, and even here, the conversation between evolutionary psychologists and critics has been noticeably less ill-tempered and more co-operative than before.[2] There are also some indications that the 'broad church' conception of evolutionary psychology described in Chapter Seven may be gaining in popularity in the academic domain. For example, several textbooks on the subject published in the past two years have explicitly taken this kind of view of the subject (Barret, Dunbar and Lycett, 2001; Laland and Brown, 2002; Rossano, 2002).

As I described in Chapter Five, the political context of this decade is now very different to that of the late 1990s, especially in the United States, but also globally. In terms of the politics important for discussions of evolutionary psychology, there has been a strong shift back toward conservative agendas, with a consequent strengthening of some of the trends in gender politics described in the thesis, particularly that of an acceptance of gender differences. Again in the American context, George W. Bush has publicly stated that 'the verdict is still out' on evolution versus creationism,[3] and his

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[1] David Adams, 'His 'n Hers' *The Guardian*, May 17th 2003.
[2] e.g. Lynne Segal and Simon Baron Cohen, 'Sex on the mind' *The Guardian*, May 3rd 2003.
[3] Mark Duff, 'Evolution challenged in US schools' *BBC News Online*, 11th March 2002.

administration has cutback funding for in research on sexuality, particularly famously in research on the transmission of AIDS and sex education. Very recently, the following report from an American local newspaper, the *Star Telegram*, was posted on the evolutionary psychology email list, which I have reproduced in full here.

> ARLINGTON - A male student at the University of Texas at Arlington is trying to figure out why some women are more promiscuous than others.
> But Jason Lyons has a good reason -- it's all in the name of scientific research.
> Lyons, 27, a Ph.D. candidate in psychology, is studying mating rituals for his thesis.
> His 33-question online survey takes about 15 minutes to complete, and includes photographs of young men with fake biographical sketches that women can rate.
> Lyons said he has about 70 usable responses to his online survey and is hoping for about 300.
> "Sexual promiscuity is a commonly studied field," Lyons said. "It's a pretty big field in evolutionary psychology right now."
> It's something men have been trying to figure out for thousands of years, but Lyons and experts in the field said research into human sexuality has more applications than polishing one's pickup lines.
> "There are many behaviors ... that we would like to better understand in order to change some of the anti-social behaviors," said Munro Cullum, professor of psychiatry at the University of Texas Southwestern Medical Center at Dallas.
> UT-Arlington psychology professor Roger Mellgren said studies such as this are important because their findings can help public health officials fine-tune campaigns against sexually transmitted diseases.
> "It's hard to convince people that these sexual diseases are a problem," Mellgren said, explaining that public health officials would better know how to promote safe sex or abstinence if they had a greater understanding of people's attitudes about sex.
> Lyons said studies show that many people express attitudes that would be considered healthy -- such as condom use and monogamy -- but then have unsafe sex with more than one partner.
> Lyons said he believes women may do this as a way to choose a mate and are under more pressure to do so because their biological clock gives them less time than men.
> "For that reason the female has to be more choosy in who she selects as a mate," Lyons said. "Sexual promiscuity can be used to actually choose a mate."
> ONLINE: http://psychology.uta.edu/lyons/sexsurvey/
> (Patrick Mcgee 'Graduate student's project studies female promiscuity' Star-Telegram, September 13th 2003)

Although the researchers in question are located at a seemingly less prestigious US university, and are probably not members of the US core-set in evolutionary psychology, they nonetheless use the label quite happily, and employ a research approach heavily influenced by EP. This serves as a useful indicator of how evolutionary psychologists' attempts at demarcations between science and politics mark a relatively weak boundary, that can and is frequently and easily crossed by many actors. I also feel that this stands as a brilliant example of how evolutionary psychology discourses can adapt to the political contexts in which they find themselves. Rather

than discussing sexual behaviour in the amoral, slightly admiring, tones that were used in the popular UK discussions of the late 1990s, this research instead seeks to study 'female promiscuity' with a view to preventing such 'anti-social' behaviour, and also uses that crucial word, 'abstinence'. This change in language helps to situate evolutionary psychology research on sexuality favourably into the very different socio-political contexts of Texas in 2003 under the US Republican administration of George W. Bush, rather than that of the late 1990s UK under New Labour.

Bibliography

As a help to the reader, I have divided my bibliography into primary and secondary sources. On the whole, the primary sources comprise popular books and media reports referred to in the text, plus any academic literature that I have been writing *about* – i.e. in evolutionary psychology. The secondary literature is that I have drawn on while doing the research, largely coming out of science and technology studies. Inevitably there has been a certain amount of overlap between the two, and if I have used a text in both capacities, or if in doubt, I have referenced it in both listings, just to be on the safe side. The differences in referencing systems reflect generalised differences in the way that popular and academic material is referred to, and includes exact publications dates for media reports. Where possible, I have referenced the initial UK publications for popular books.

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Appendix I:

Interview Schedules

INTRODUCTION

As said before, doing PhD on popularisation and communication of evolutionary psychology. I'm now in my second year, having previously completed an MSc. thesis structured as a pilot project for my current research.

I have just spent six months doing a full survey of the UK media coverage of evolutionary psychology, and am now moving on to an interview based stage of my research. I am interviewing a wide range of people, including evolutionary psychologists and their opponents who have been active in the media, journalists and other media workers and academics who are working in the area, but are not greatly engaged in popularisation.

In the interview, I'm going to ask you firstly some basic biographical details of your current research and training; your views and perceptions of evolutionary psychology; about relations between EP and the disciplines around it; popularisation. I'll then be showing you some of my findings about evolutionary psychology in the media and discussing some of the possible reasons for these patterns. Finally, I'd like to talk a little about how you see the relationship between popular and academic science.

I'd like to record the interview, and transcribe it for my records. This is also helpful for you, as you can look over what you've said, and it ensures that I don't misquote you. I will send you a copy of the transcript ASAP, and will also send you a copy of anything I write where I use quotes from the interview. If you're really unhappy with anything that's been said, I won't use it. Also, if it's preferable for you then I can make you anonymous instead.

INTERVIEW SCHEDULE – EPS / 'PUBLIC' ACADEMICS

Biographical

Firstly, could you explain briefly, in your own words, about your current research interests / what you're working on at the moment ? <KEEP THIS BRIEF!>

Where did you do your academic training (first degree/postdoc), in what areas, and who did you work with ?

Evolutionary Psychology

i.) Definitions

What do *you* think evolutionary psychology is?

What do you think evolutionary psychology should be? As is/ broader defin.?

When and where did you first come across the *term* 'evolutionary psychology' ? (use own example of not hearing about till after degree)

Do you consider yourself to be an 'evolutionary psychologist'?

<then> When, where and how do you feel you first became involved with evolutionary psychology *academically* ? (maybe qualify this to avoid 'always have' type answers – i.e. "EP in the sense of Cosmides & Tooby").

What do you know about the initial formation of evolutionary psychology (in tighter sense) as an academic field ?

More about Darwin@LSE for those involved: why was it set up; how; funding; how publicised to media set etc.

Otherwise: When and where did you first became aware of evolutionary psychology *research* ?

ii.) Disciplinary Relations

In which academic disciplines and journals do you think evolutionary psychology has come from and is currently discussed in ? If acc: How easy is it to get EP published & where?

Where is evolutionary psychology going next ?

What do you think are the differences and similarities between evolutionary psychology, sociobiology and behavioural ecology ? How do they relate to one another in academia & to the popular domain ?

iii.) Social and Natural Sciences

Cosmides & Tooby refer to evolutionary psychology as "a new paradigm for the social sciences"; in a similar but opposed vein, Hilary Rose writes of evolutionary psychology as "colonising the social sciences". Do you see these views as an accurate reflection of the situation or as an exaggeration ? Why?

What kinds of attitudes towards EP have you seen expressed in your own and in other academic disciplines ? In your experience, are attitudes <to EP> within social and natural science (e.g. biology and psychology) similar or different ?

Have you heard of the 'science wars' ? Series of public conflicts over 1990s between 'rationalist' view of science, and view of science as being political and/or social. Many actors on 'science' side are also strong proponents of evolutionary psychology, e.g. Dawkins, Lewis Wolpert.

Do you have any ideas about why this might be? Do you think it has anything to do with creationism?

<or>
Many prominent exponents of evolutionary psychology in the public domain have also been active or involved with the 'science wars' of the 1990s. Do you have any ideas about why this might be? Do you think it has anything to do with creationism?

Popularisation

i.) Personal Experiences and Views

Tell me about your involvement in popularisation activities and work with the media. When and how did this first come about, and what does it mostly comprise of for you?

Why do you do it ? Do you enjoy it ?

What have been your most positive and negative experiences of working with journalists and other media workers ?

Do you feel you have similar or different aims to people working in the media? <do they want to talk about the same things as you; are you approaching them or are they approaching you?>

What kinds of attitudes have you encountered from peers / colleagues about this side of your work ?

What kinds of people do you think are the main audience for your popularisation work ? What is your 'ideal' audience (is this different)?

What would you like people to take away when encountering your popularisation work?

iii.) Evolutionary Psychology in the Media

Do you think that evolutionary psychology has had a similar or a different kind of reception to Sociobiology in the 1970s? Why?

Show and explain quantitative findings of media coverage of EP: levels over time, differences in location and authorship.

Why do you think EP generates the levels and type of media coverage it does?

Going to show you a range of factors that have been suggested, could you comment on each of them.

- Context of current biological findings, genetics (especially Human Genome Project), neuroscience, etc. in the media. General popularity of biological explanations for human behaviour.
- Popularity of 'natural history' / animal behaviour programmes.
- Concerns/worries about 'biological determinism'
- Subject matter: about people; also 'origin myths/human nature'
- Sex as selling point / attention grabber
- Current gender politics, especially popularity of ideas about gender differences (e.g. the 'sex war' Men are from Mars, Women are from Venus).
- General growth in popular science, especially popular science books
- Academics willing & able to talk to media. (point up authorship findings)
- Interdisciplinary nature of subject, and of debate over EP

Is there anything I've not mentioned that could be a factor?

Of these, which do you think have been the most important? Could you rank them?

iv.) Popular and Academic Evolutionary Psychology

Do you feel that the content and message of evolutionary psychology is changed when it moves into the popular domain?

How do you see the relationship between popularisation of EP and academic research / debate? Is research 'simply' disseminated, or does popular work have any influence on academia?

INTERVIEW SCHEDULE – 'BENCH' ACADEMICS

Biographical:

Firstly, could you explain briefly, in your own words, about your current research interests / what you're working on at the moment ? <KEEP THIS BRIEF!>

Where did you do your academic training (first degree/postdoc), in what areas, and who did you work with ?

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i.) Definitions

What do *you* think evolutionary psychology is?

What do you think evolutionary psychology should be? As is / broader defin.?

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Otherwise: When and where did you first became aware of evolutionary psychology *research* ?

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In which academic disciplines and journals do you think evolutionary psychology has come from and is currently discussed in ? If acc: How easy is it to get EP published & where?

Where is evolutionary psychology going next ?

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Popularisation

i.) Personal Experiences and Views

Are you, or have you been involved in much popularisation activity or contact with the media (explain this includes books) ? What kinds of things have you done ?

What are your feelings about science popularisation and the ways in which science is covered by the media ?

What kinds of attitudes have you encountered from peers / colleagues about popularisation ?

iii.) Evolutionary Psychology in the Media

How much evolutionary psychology have you seen in the media ? In what kinds of contexts have you seen it ? When did you first notice it ?

Do you like the ways in which EP is discussed outside of academia ?

Do you think that evolutionary psychology has had a similar or a different kind of reception to Sociobiology in the 1970s? Why?